5073

DECEMBER, 1929

COTTON

THE TEXTILE MANUFACTURING JOURNAL

Beauty and Utility...

A combination that makes for steady sales... can be achieved by the manufacturers of underwear, hosiery and woven fabrics with Standard Durene because of its sheen, pliability, washability and wearability.

STANDARD-COOSA-THATCHER COMPANY
Chattanooga, Tenn.
Executive and Sales Office:
Lafayette Building, Philadelphia

Table of Contents Page 53.

KNITTING SECTION, Page 193-R

Advertisers' Index, Page 188.

Volume 94.
Number 2.
Fifteen cents a copy.

Leading retailers *throughout the country* featuring cottons--with excellent results

Cotton-Textile Institute reports new cotton prosperity due to new merchandising methods.

130,000,000 yards more! That is the astounding increase in the consumption of cotton goods for the first six months of 1929 . . . according to figures established by the Cotton-Textile Institute in New York.

Everywhere the Cotton-Textile Institute sees signs of awakened interest in cotton goods. Thousands of women are attending cotton style shows. Home economics workers in villages, colleges and institutions all over are advocating the use of cotton. For men's fashions, too, cotton is being seriously considered.

This tremendous swing towards cotton by the consuming public finds the retailer featuring cotton goods of quality. It finds the cotton goods manufacturer making *quality* merchandise—and introducing the most up-to-date merchandising methods to sell it. It finds him using aggressive selling methods and aggressive advertising programs. *It finds him branding his fabrics* with his trademark.

And the consumer, long accustomed to buying other commodities by brand, is now glad to get the same assurance of quality when purchasing cotton goods. The manufacturer is finding out that the branded fabric starts out with other important advantages. For example, it encourages a permanent demand for the goods. It creates invaluable good-will for the manufacturer. It prevents substitution of inferior goods.

* * * *

To Kaumagraph have come many of the most prominent cotton goods houses for assistance in branding their fabrics. Kaumagraph has helped them to design a trademark and to register the trademark. And from its 27 years of experience Kaumagraph has helped thousands of manufacturers to find the most beautiful and economical method of applying the trademark to the fabric—with Kaumagraph Dry Transfers.

We are at your service on your own trademarking and identification work. Send for additional information . . . and a copy of an engineer's report on actual operating costs for applying trademarks with Kaumagraph Transfers.

KAUMAGRAPH COMPANY
200 Varick Street, New York City
Boston, Chicago, Philadelphia, Los Angeles, Charlotte, N. C., Chattanooga, Tenn.
Paris, Ont., Paris, France

A few of the country's foremost stores that have featured cottons in their advertising:

BOSTON
R. H. White Co.
Jordan Marsh
E. T. Slattery
Filene

BROOKLYN
Martin's

NEWARK
L. Bamberger & Co.

NEW YORK
Best & Company
Lord & Taylor's
McCutcheon's
Bloomingdales

NEW YORK (Con'td.)
Gimbel Bros.
R. H. Macy & Co.
Stern Bros.

WASHINGTON
Kann's
Woodward & Lothrop

COTTON is published monthly by W. R. C. Smith Publishing Co., Dalton, and Atlanta, Ga. Subscription rates, United States and Possessions, $1.00 per year; Canada $1.50 per year; Foreign $2.00 per year. Entered as second-class matter at the postoffice, Dalton, Ga., under the Act of March 3, 1879.
Address all communications to COTTON, Grant Bldg., Atlanta, Ga.

Vol. 94 **COTTON** No. 2

December, 1929

W. R. C. SMITH, Publisher
T. W. McALLISTER, Editorial Director ROBERT W. PHILIP, Editor

Contents

General and Technical—

The Value of New Equipment ---- 115
Address of J. E. Sirrine ---- 117
Address of J. B. Harris ---- 118
S. T. A. Meets at Spartanburg ---- 119
Sizing Methods and Ingredients ---- 120
Slashing and Weaving Discussed at Texas Meeting ---- 123
A New Abrasion Machine ---- 128

Current Topics—

Talk of the Month ---- 132
Egypt Good Market for American Cloths ---- 134
Industrial Relations and Distribution Discussed ---- 134
What the Southern Mills Are Doing ---- 136
Cotton Comment ---- 138
Notes About Men You Know ---- 142
An Old Timer Says— ---- 147

How Other Men Manage—

Winners in "Old Timer" Weaving Contest ---- 151
Report on Humidifying Practice ---- 162
More Comments on Roll Weighting ---- 169
"Maintaining Uniformity in Picker Laps" ---- 175
Another Layout for 70s ---- 181
More About Preventing Fly Waste ---- 182
Shall a Man Wait for Promotion? ---- 182
A New Method of Conditioning Yarn ---- 185

Knitting Section—

A Practical Glossary of Full-Fashioned Terms, by C. H. Baxter ---- 195
Among the Knitting Mills ---- 205
Letters from an Old Knitter to His Son ---- 207
Replies to Question on Needle Breakage ---- 209
Baxter Answers Question on Seaming ---- 209
Selecting the New Foreman ---- 211
A Discussion of Oiling Rayon ---- 212
Preventing Rust Spots on Full-Fashioned Legs ---- 212
Preventing Smash-ups on Heel or Toe ---- 215
Sleazy Knitting on Full-Fashioned ---- 217
The Knit Goods Markets ---- 221
The Yarn Market ---- 228

Published Monthly By

W.R.C. SMITH PUBLISHING COMPANY, Grant Bldg., Atlanta, Ga.

Publishers Also of
Southern Automotive Dealer
Southern Power Journal
Southern Hardware
Southern Aviation
Electrical South

Member of
Associated Business Papers, Inc.
Audit Bureau of Circulations

SUBSCRIPTION PRICE, $1.00 PER YEAR; CANADA, $1.50; FOREIGN, $2.00.

When changing address notify us, not the postmaster. Give both old and new address.

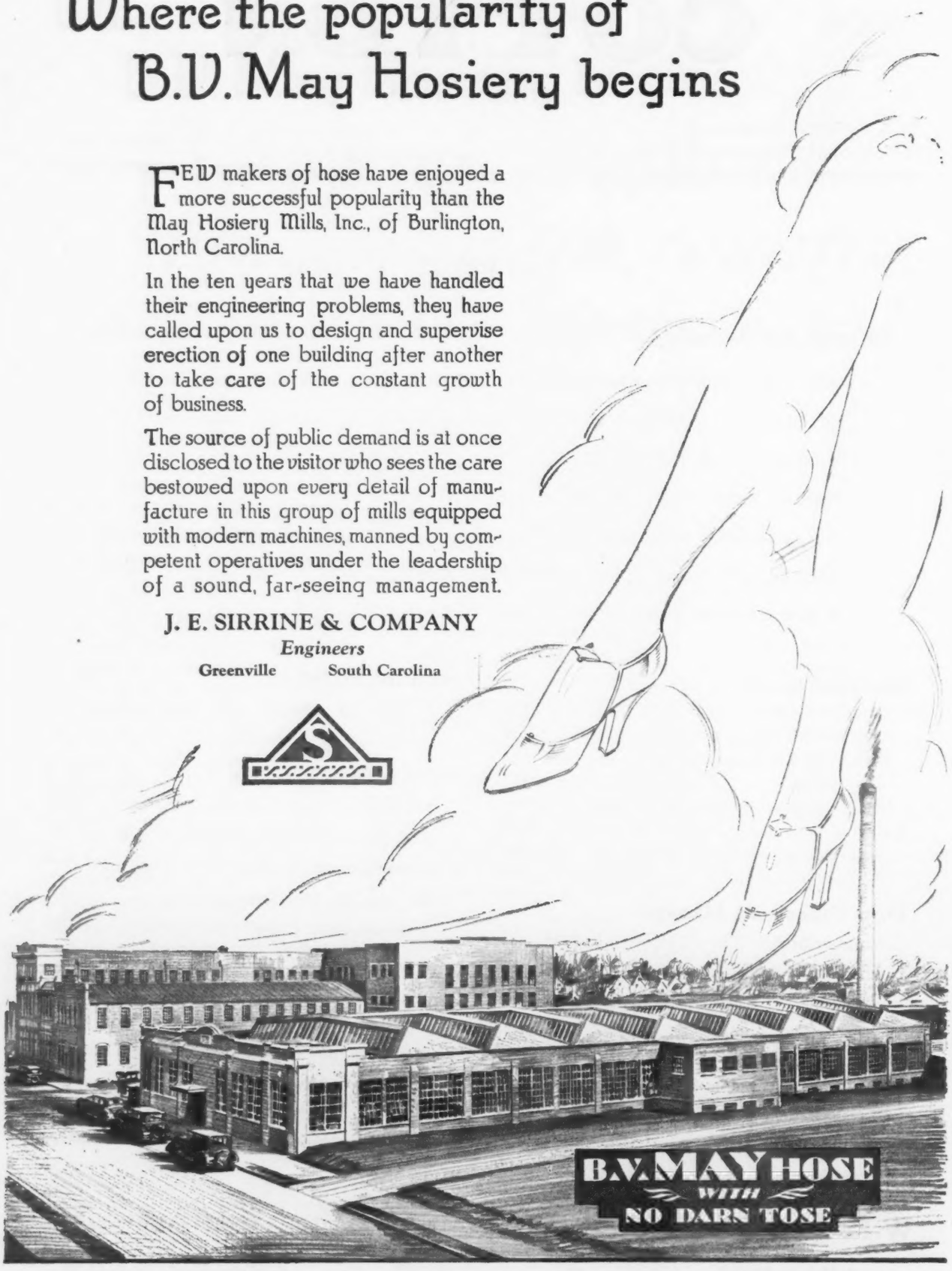
Where the popularity of B.V. May Hosiery begins

FEW makers of hose have enjoyed a more successful popularity than the May Hosiery Mills, Inc., of Burlington, North Carolina.

In the ten years that we have handled their engineering problems, they have called upon us to design and supervise erection of one building after another to take care of the constant growth of business.

The source of public demand is at once disclosed to the visitor who sees the care bestowed upon every detail of manufacture in this group of mills equipped with modern machines, manned by competent operatives under the leadership of a sound, far-seeing management.

J. E. SIRRINE & COMPANY
Engineers
Greenville South Carolina



ENGINEERING CONSULTANTS ON THE SOUTH

COTTON

Vol. 94 December, 1929 No. 2

The Value *of* New Equipment

By John D. Jones, Gen. Supt.

Union Buffalo Mills Co.

HERE ARE the views of Mr. Jones, and those of J. E. Sirrine and others, on this important subject, which formed the theme of the Southern Textile Association meeting in Spartanburg last month. At the end will be found the round-table discussion which took place at that time.

Quite co-incidentally, this subject was the text of the splendid article by Herbert G. Beede, appearing in the October number of COTTON.—THE EDITOR.

DURING THE LAST TWO YEARS we have heard a great deal of extended labor. Great progress has been made in that direction, with the result that economies have been effected and the weekly wage increased. The wisdom of this will not be denied by anyone who gives it a serious thought. The basis upon which extended labor is founded consists entirely of good running work, or to be more specific, end breakage. Granting that this is true we must conclude that there are two major factors controlling end breakage. The first of these is the character of cotton, or the stock we are using, while the second is machine conditions. We shall dismiss the former from this discussion with the statement that recent developments in new opening and cleaning machinery assist greatly in improving the stock. The latter factor, machine conditions, can be improved in two ways, viz., by overhauling and by replacement. Again we dismiss the former from our discussion and center our attention upon replacement, or new machinery.

The invested capital of a cotton mill consists largely of machinery, and to operate that machinery after its economic life has passed, or to replace it prior to that time is certain to reduce profits, or perhaps more appropriately expressed, increase losses. The economic life of a machine is not always determined by its age, for a new machine may become inefficient comparatively soon due to improvements in later models.

In attempting to arrive at a conclusion as to the advisability of replacing old machinery we need some gauge upon which to base our action. If the advantages of the new over the old, expressed in dollars saved or earned, is sufficient to carry all proper fixed charges of the capital to be invested, then we must conclude that new machinery is an economy. The difficulty in that procedure is, of course, in determining in dollars the advantage of the new over the old. Some factors can easily be measured while others border on the intangible, thus bringing into play the wisdom and good judgment of the manager, superintendent or overseer.

John D. Jones.

Thus far we have considered the advantages of new machinery over old largely from a cost standpoint. Frequently the character of the product to be produced will determine the value of the new machinery over the old. In recent years, due to intense competition from over-production, manufacturers have attempted to encourage business by offering a superior product at the same price as his competitors. One such offer will often establish a precedent and cause the buyer to demand the same quality product from all producers. The ultimate result is that the buyer obtains a superior product at the old price and the industry is the loser. A typical illustration of this fact is the ordinary print cloths which are made on feeler looms and sold at no premium over the regular market for such constructions. If you have not figured the cost of operating feelers, do so, and see how the margin of profit is decreased or the losses increased. Good judgment on the part of the superintendent or overseer will adapt the product to be made to the machinery to be used, or if the product is fixed, suitable machinery will be provided.

In as brief and as concise a manner as possible let us discuss for a few minutes some of the recent developments in new machinery for the different departments. True economy begins at home, so before going to the mill, if we have a clerical force of sufficient size, let's at least ask the question, Can I use to advantage calculating machines, change list machines, slide rules, or any of the time and labor saving devices so essential to modern business?

The power, either purchased or generated, is a large item of cost. The use of pulverized fuel or modern stokers may be the means of reducing that item. If you generate your power from water, how does the efficiency of your wheel compare with those of modern design. Recent years have shown

"IF we can equip our southern mills with the very best of machinery, and improve our operating methods, we can hopefully look forward to an increased production per unit, and increased profits for the mills, and a higher wage for the operative."—J. E. Sirrine.

wonderful progress in this field.

In the machine shop we have been slow to adopt many of the improved machines. The automatic gear cutter, modern quick change lathes, high speed drills and high speed hack saws have reduced the payroll or enabled the same force to accomplish more work.

In the opening department there is little, if any opportunity for new machinery to reduce the labor cost, but the superior opening and cleaning of the horizontal cleaner has made it possible to effect savings in the picker room due to the elimination of processes. In like manner my experience has been that the proper blending and mixing of cotton by the use of a number of feeders and a conveyor belt, will more than justify the small expenditure.

The Single-Process Picker.

In the picker room the outstanding development is, of course, the single-process picker. The economy effected there is about in proportion to the number of processes eliminated. Better designed machines, more sensitive eveners and superior workmanship combine to produce an evener, cleaner lap, which paves the way to low end breakage in future processes.

Where scavenger and roving waste is being fed by hand, the use of a special feeder will almost invariably reduce the payroll.

Due to the nature of the process of carding, new machinery can effect but little if any economy, as the production is fixed by the character of the work desired. The improved methods of stripping are worthy of consideration, not only as a means of effecting a saving, but because they eliminate one of our industry's most disagreeable jobs. It is also reasonable to assume that accidents at this point will be greatly reduced.

In recent years much progress has been made in the character of work produced on the drawing. This has been largely due to a liberal reduction of front roll speeds. As in the carding process, here it is also largely a matter of quality, and replacements must be considered from that angle, rather than from the possible savings.

The Fly Frames.

Where maximum efficiency is expected in the spinning, the fly frames play a most vital part. No yarn can be superior to the roving from which it is made, so here is the real beginning of our final end breakage results. The old style, badly worn, fly frames cannot produce a roving which will average less than forty ends down per thousand spindle hours in the spinning. Likewise the yarn spun can never be expected to pass the weave room with a loom stoppage of four, or less, per ten hour day. Here, as perhaps in no other process, careful study and good judgment is required to determine the economical procedure.

"A Thing of Beauty."

The spinning frame of today is a thing of beauty and a joy forever to the superintendent or overseer who is so fortunate as to possess it. Here improvements in design, material and workmanship have combined in an unusual manner to produce a better yarn with higher speeds and longer drafts. Larger rings and longer traverse not only give the advantages of a larger package, but reduce doffing costs. The long draft systems make it possible to use a coarser roving with attendant savings in cost, and the superior drafting will often enable the spinner to produce an equal, if not superior yarn from cheaper stock. Individual motor drives, large cylinders mounted on ball bearings, sturdy creels, tape drives, accurately cut gears, case hardened rolls, and many other minor improvements produce a smooth running frame which can be easily and cheaply maintained.

Changes in spooling and warping present even greater opportunities than spinning. The high speed spooler and warper make it possible to deliver a superior warp to the weaving department at a considerable reduction in cost. Here, due to this two-fold advantage, replacement appears very attractive and is worthy of most earnest consideration. The increased yardage on high speed warper beams will eliminate waste and produce better work at the slasher.

In the slasher room new machinery is of little moment, providing the old is in good mechanical operating condition. Attachments such as ball bearing creels, temperature controls and tension indicators are worthy of consideration as means of delivering a constant supply of good uniform warps to the weave room.

The automatic loom, from a practical operating standpoint, seems to have thus far pretty well resisted all efforts to make any material change in its speed. Here the mechanical condition of the loom, cost of maintenance and suitability for the cloth to be woven are the determining factors. The loom of today with individual drive, large beam, improved feeler, cut gears and other improvements too numerous to mention, is a superior machine capable of producing a superior product, and as such must be given every consideration. One of the outstanding advantages of this new loom is the wide variety of fabrics it is capable of producing, thus broadening our potential market.

In the cloth room we dress up our product and send it forth to meet our customer. Competition is keen and any reasonable expenditure in improving the appearance of the product or the package is well justified. Recent years have not brought forth any radical changes in cloth room machinery, but there has been a constant improvement. Perhaps the shear or combination shear and brusher is receiving more consideration than any other single machine in this group. Any machine which will eliminate hanging threads on the face and selvage of the cloth is worthy of investigation. Results here cannot be measured by savings effected, but rather by improvement in character and appearance of product, which has an intrinsic value

even though intangible.

Turning back now to our plant as a whole, we must not overlook so vital a problem as humidity. Years ago it was only considered necessary in the weave room, but today it has found favor in all departments from the picking through the cloth room. Recent years have brought about wonderful improvements, and especially in regulating devices, which are so essential. The plant that does not have an ample supply of well regulated humidity can seldom spend money for other purposes which will show a greater return.

In judging the future we are yet to find a better guide than our experience in the past. It is a significant fact that the plants which have survived and made the best records in the past are those which we speak of as being modern or up to date. We must, therefore, conclude that a machine which will not perform its work in a satisfactory manner must be revamped, replaced or put on a suitable product. The machine which does perform its work in a satisfactory manner must be replaced when a new machine is developed which will produce a unit of work at a cost, including fixed charges, which does not exceed the cost of the same unit of work when produced on the old machine.

Following Mr. Jones' address, J. E. Sirrine, head of J. E. Sirrine and Company, Greenville, S. C., prominent mill engineers and architects, spoke on the same subject, saying in part:

Address of J. E. Sirrine

THE VALUE OF NEW MACHINERY to a textile plant depends on its effect on three things: increased production, decreased cost, and increased earning power for the operatives, and unless there are improvements in one or more or all of these three conditions, purchase cannot be justified. Let us consider the three points in the order in which they have been named.

We sometimes hear people say that there has been very little change in the design of cotton mill machinery in the last two decades, but is this true? We have completely revolutionized the character of opening machinery, and have added to its cleaning devices as well. Pickers are now being built very largely on the one-process principle, and there are many important improvements in the design of all card room machinery. In spinning we have gone to wide gauge, tape drive, larger rings and longer traverse. The process of spooling is being rapidly replaced with automatic spooling or winding on large packages, and warping is done now at a speed that was formerly thought impossible. While the basic principle of weaving has not been changed, there has been a very decided improvement in the design of looms themselves.

J. E. Sirrine.

In addition to changes in design, there has been a substantial improvement in the accuracy with which machinery is built, and automatic tools have been made with parts much more nearly interchangeable.

I think we can, therefore, safely say that the machinery built today is a great improvement over the machinery of 20 years ago, even if both were new today, which of course is not the case, and in addition to starting out with a better machine you have, as compared with the old, a better physical condition.

With all of these improvements in design and workmanship, I think it will be conceded that production per unit has been increased. This increase in production naturally makes it possible for an operative to get more production per machine as well as to tend more machines, and this directly affects the labor cost, even though the increase in the number of machines assigned to a given operative be accompanied by an increase in pay.

Of course, the introduction of new machinery into a plant must or should be accompanied by some change in operating methods, otherwise the great benefit from it cannot be secured.

I will mention one or two cases that have come under my personal observation. One was a mill making very heavy goods, where they were using machinery probably as good as the average old machinery in the South. They were spinning a very coarse warp yarn, and the annual production was about eight million pounds. We put in new openers and cleaners; we revamped the picker room, threw out 20 old cards and put in new ones, put in some new drawing, and all new warp spinning, put in winding and warping, but did not change the looms.

The result has been that now on full time operation, instead of eight million pounds they make eleven million pounds. They are running part of the looms at night, and we had to increase the number of looms. The cost reduction was three cents a pound on eleven million pounds, that is $330,000, where the total amount spent for new machinery was slightly over $400,000. In addition, they not only are working less people in the mill, but every one that is working in the mill is making more money. The seconds were cut in half.

We had another case of what I thought was one of the best print cloth mills in the South. We were making some additions, and put in new warp spinning. We increased the length of the frame in spindles about 15 per cent. We increased the front roll speed 12½ per cent, and the spinners run just as many sides on the new spinning as on the old. Where they were formerly producing 87½ pounds in a given time, they are now producing 115 pounds—that is, an increase of 30 per cent in production per operative. We also put in some other things, and we were able to run an additional 300 looms without any more weavers and without any other change in our system. We did not put in battery fillers.

New Machinery Which Cost $400,000---

Produced an Annual Saving of $330,000, Permitted Everyone to Make More Money. and Cut the "Mill's Seconds" in Half!

A pretty good investment for the mill referred to by Mr. Sirrine in his address at Spartanburg, before the Southern Textile Association. The complete text of his remarks will be found in this issue.—The Editor.

I think we could cite case after case, but to you gentlemen it would be an old story. I want to come to the third thing, which to my mind is equally important, if not more so, than the other two, and that is the effect upon the earning capacity of the operatives.

When automatic looms were first introduced, it was soon found that in order to get full benefit from them, it was necessary to make better warp yarn; not perhaps any better than should have been made before, for the non-automatic looms, but while it was advisable in one case it was necessary in the other.

In like manner, when new machinery is installed in a plant, care should be taken in the selection of the cotton, and in all preparatory processes, so that there will be fewer broken ends and therefore less work for the operative to do to keep the machine running.

We now come to the third advantage, which is the effect on the earning capacity of the operative, and which to my mind is equally or more important than the other two.

Those of you who are in constant contact with the people who work and live in the mill villages must have in your hearts an earnest desire to see the living conditions, the welfare and the happiness of these people constantly improved, and while much has been done in the last 20 years to improve the status of the textile operatives, there is still much that can be done, and I do not believe that we shall ever have continued prosperity for the mills and the proper standard of living for the operatives until we finally and definitely get this industry out of the low wage class.

In the face of competitive conditions this will have to be accomplished slowly, but we can, at least, make some progress from day to day. I think it will be admitted by every thinking man that the most intelligent help are, in the long run, the cheapest, and in every mill village in the South there is growing up a new generation of young active and intelligent people who are being educated and to whom you must look for your best and most satisfactory help. If you do not give them as good an opportunity in the textile industry as they can find in some other occupation, the brightest of them will drift away and only the poorest will remain.

You may ask what this has to do with machinery. It seems to me the answer is plain—the industrial history of the world shows most clearly that the wages are higher and the living conditions are best in those countries where the output per capita is highest. Unfortunately, some of the operatives, as well as some outsiders who are undertaking to advise them, are opposed to the principle of increasing the output per operative on the ground that such a policy is inimical to the interest of the worker. There could be no greater fallacy, and anyone who harbors this belief and attempts to force it on others will find in the long run that he might as well try to sweep the tide back with a broom.

Theoretically, most of the processes in a cotton mill require machine supervision rather than direct labor by the operative, and the number of machines that can be supervised by one operative will vary inversely with the number of stoppages due to breaks either in sliver or yarn. It is of course presumed that any intelligent mill executives will see the necessity of giving the operatives a proper share of the value of his increased output.

I do not want you to think I am radical, but when you get out of the low wage class, when you get to where you can compete with other industries, you are going to avoid what has happened in another section of the country. I talk with a good many men in New England, and they tell me that the standard of their help is lower and efficiency is very much lower than it was 30 years ago or even 20 years ago, and we all know the reverse is true down here—the standard is higher.

The South is going to develop more and more along industrial lines, and with it will come increased competition for help. You have got to meet that condition, and if you allow other industries to rob you of your best help, you are going to find yourself exactly in the position that many New England mills are in today, and you are the only ones who can avoid it.

If we can equip our southern mills with the very best of machinery, and improve our operating methods, we can hopefully look forward to an increased production per unit, and increased profits for the mills, and a higher wage for the operative.

The next man on the program was J. B. Harris, vice-president, Greenwood Cotton Mills, Greenwood, S. C., and Ninety-six (S. C.) Cotton Mills, who spoke in part as follows:

Address of J. B. Harris

MOST OF THE SUCCESSFUL CONCERNS have a program for continual improvement, replacement of equipment and adoption of new manufacturing methods. It is up to us as key men to increase the efficiency of our plants and keep down our manufacturing costs, or we will be numbered among the weak and the inefficient who must of necessity be eliminated.

During the past few years, a great deal of attention has been given to the proper opening and mixing of cotton, and I dare say more improvement has been made along this line in five years than in the preceding 20 years. Almost any mill that is now using old and obsolete machinery in their opening rooms, can lower the grade of cotton being used and save from ½ to one cent per pound by installing new and modern opening, cleaning and picking machinery—if they wish to effect their saving in that way.

In my judgment, the development of the one-process picker has been one of the outstanding contributions of the machinery builders to the textile industry during the past few years. We recently installed four one-process pickers in one of our plants, replacing old equipment consisting of four breaker pickers, five intermediates, and five finishers. Four men were needed to operate the old machines. Only two are needed on the new ones. There is also a saving in power and floor space, but we think that the greatest benefit derived from their use is more uniform work and better preparation of the laps.

The new spinning now being built is greatly improved over the old types, and much better results can

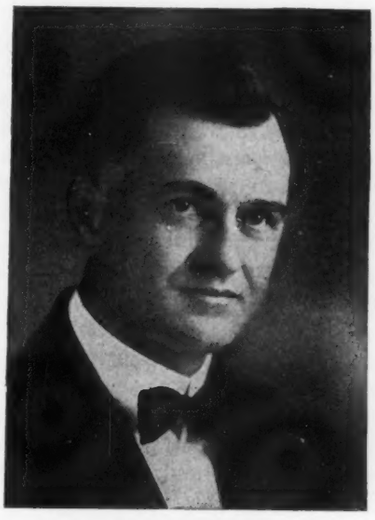
(*Continued on page* 191.)

S. T. A. Meets *at* Spartanburg

OPERATING EXECUTIVES of southern mills, meeting in Spartanburg, discuss the replacement of machinery and its bearing upon cost, quality, etc. Gyles is heard in discussion of crime prevention.

THE VALUE OF NEW MACHINERY, to replace old equipment, was the theme of the technical discussion at the semi-annual meeting of the Southern Textile Association, held at the Franklin Hotel, Spartanburg, S. C., on Friday, November 1st. Consideration of this subject, by three mill men and an engineer, together with round-table discussion of it, occupied the Friday afternoon session which concluded the convention, the meeting being condensed into a one-day affair. (The papers and discussion on this subject are reported on page 115 of this issue.)

L. L. Brown, superintendent, International Shoe Co., Malvern, Arkansas, presided at the convention as president of the Association. The chief speaker at the opening session Friday morning was Herbert E. Gyles, an attorney, of Aiken, S. C., who discussed the subject, "Crime Prevention or the Leisure Hour." Mr. Gyles cited figures and information to show that within recent years, the trend of crime has been that it is being committed mainly by the younger element of the country, and emphasized the influence of environment as a cause for this. His major point was an argument for supervised playgrounds for the growing



L. L. Brown, President.

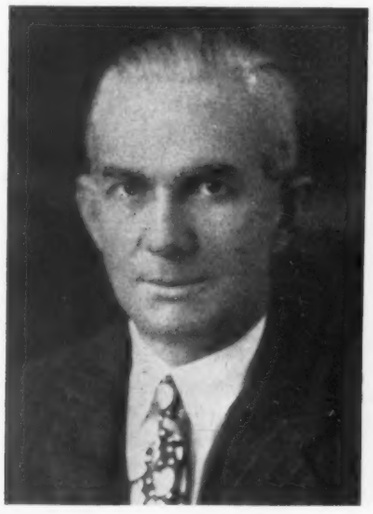
child, as a means for inculcating the proper viewpoints and attitudes—to obviate and preclude the criminal turn of mind in the years of early adulthood. There was some informal discussion of Mr. Gyles' remarks, by John W. Fox, of the Southern Power Co., and J. M. Davis, superintendent, Newberry Cotton Mills, Newberry, S. C. Mr. Fox declared the main place for educating the child is in the home; that the wave of crime among young people is largely to be attributed to a laxity among parents and leaders as to the proper example and instruction. Mr. Davis told of the success which his mill has experienced with the operation of a village community house and reception and entertainment program, as well as adequately supervised play activity among the children of the village.

In keeping with the theme of the meeting, Carl R. Harris, superintendent, Erwin Cotton Mills Co., Cooleemee, N. C., a past president of the Association, in responding to the address of welcome by Ira Blackwood, struck a timely note in commenting upon the present situation in the southern mills. He said, in part:

The Responsibility of the Operating Executive.

"We overseers and superintendents of the South are blessed in that the people we work with daily are of our own blood; they live, think, act and have the same aspirations and pleasures as we do.

"Our industry and our people are passing through a period when the highest type of leadership is needed.



Walter C. Taylor, Who was Elected Secretary-Treasurer.

Those of us who have risen to positions of leadership cannot over-estimate the responsibility which is ours. Our opportunities for affecting character rank second to no less an influence than the home. Our people naturally look to us for an example that they can follow. We should strive to win their confidence, and the only way we can successfully do this is to deserve it.

"At this time when so much effort is being expended to disrupt the sane thinking and reasoning of our people, it is our duty to make every effort to guard them against making any false moves. The statement has recently been made that 'The labor movement in the South finds itself confronted with one of the most gigantic campaigns ever launched by the employers to prevent organized labor from doing its duty.' That there is any such campaign being waged is news to me.

(*Continued on page* 189.)

Sizing Methods *and* Ingredients

By Vasser Woolley

THE QUESTION of what constitutes a well-sized warp is usually answered, "One which weaves well, sheds none or little and is suitable for the subsequent processes of de-sizing, finishing, dyeing, etc." Further we would like to answer: What makes a warp weave well? In order to do this we must consider the mechanical actions of the warp during the process of weaving.

The mechanical actions which a warp undergoes can be divided into three heads: *First*—Abrasion, occurring through the drop wires, the harness eyes and the reed. *Second*—Tension on the "give and take" that is required of the warp as the reed beats the filling into the cloth. In this connection I have often asked weavers what would happen if instead of using a cotton warp, they substituted steel wire. The usual answer is you would simply weave steel cloth, or what would really happen is the breaking of some of the parts of the warp because there is not enough give in the wire warp to allow the loom to operate. This "give" must also be as a rubber hand and after the tension has been released, it should go back as nearly as possible to its normal length. *Third*—The real mechanical action that the warp undergoes is that of bending, better described as its flexibility. This occurs as its position changes with the motion of the loom, also, to a lesser degree, as the warp passes over the whip roll.

THIS discussion of sizing ingredients and methods was presented at the meeting of the Texas Textile Association in Dallas recently, a complete report of which will be found upon another page of this issue. Mr. Woolley is vice-president of the Seydel-Woolley Company, of Atlanta.

Now, keeping in mind these actions, the question arises as to size that will enable the warp to go through each of these better than a raw yarn, with chemical help. Some attack this problem from the standpoint of penetration. You hear a lot of talk about the size not penetrating the yarn sufficiently or about one ingredient or another giving better penetration. Strange as it may seem, we go at the problem from another angle.

We do not want complete penetration of the material which most mill men refer to when they speak of penetration. Our theory rather is to put a tough, elastic, flexible, film *around* the yarn, which penetrates only sufficiently towards the center to *anchor* this film. As an example, the roots of a tree do not penertate to the center of the earth but they go sufficiently into the ground to protect the tree from the elements and storms.

Another example: A great many people have the mistaken idea that good weaving depends upon tensile strength, but it does not, it depends upon, as I said, flexibility and elasticity. If this were not so, mills weaving 12s yarns should have a higher percentage of production than mills weaving 30s—which, as you know, is not the case. A good illustration of the idea of penetration is as follows: Here I have a piece of cardboard. When I pull it, it has great strength—it does not give. I am unable to pull it in two. However, I bend it once or twice and then pull it and it falls to pieces—it has strength but no flexibility. On the other hand, here is a piece of ordinary writing paper. I pull it and it is easily pulled in two, however, I can bend it practically all day and it still has its same strength—it has flexibility.

What is Cotton?

Now, before taking up the ingredients that can be used for size to give this protective, elastic, tough film, it would be interesting to know what the substance, cotton, which we are dealing with, consists of, as there might be certain ingredients in the cotton that would not permit the use of certain ingredients in the size mix and vice-versa—there might be certain ingredients in the cotton which would require the addition of other ingredients to the size mix.

Mr. Paul Seydel searched the literature of five different languages and carried on a great deal of research work on samples of domestic cotton. After compiling the data he found that cotton is composed of three constituents. First, cellulose; second, water; and third, a group of waxes, resins and chemicals. Cellulose will average about ninety per cent; water about seven or eight per cent and the waxes, resins and salts about two or three per cent. Depending upon the weather conditions, the soil and the age of the cotton—these three constituents vary and the group of waxes and chemicals has been found to, in some cases, reach as high as seven and eight per cent.

It was important to find out what these chemicals were and of what nature the waxes and resins were. Suffice it to say that the waxes we found to be very hard, with a high melting point. The chemicals consisted of nitrogenous and mineral substances. The average was as follows: Waxes and oils about four-tenths per cent; nitrogenous substances six-tenths per cent; mineral matter one per cent; making a total of two per cent. As stated above, the mineral matter consists of chlorides, carbonates, sulphides of potassium, sodium, magnesium and calcium with a small amount of iron and aluminum.

It is due to these chemicals having an attraction for moisture that cotton retains its eight per cent of moisture. If you dry it and leave it in a moist atmosphere, it will take moisture up to about that percentage. You often hear bleacheries and finishing plants raise objections to certain ingredients they find in the cloth and blaming the size mix for this. In our ex-

perience, no sizing manufacturer adds to the cloth anything like the percentage of these so-called objectionable ingredients as are contained in the natural cotton.

Selecting the Ingredients.

We now go to the selection of our ingredients for the size mix but we are governed in our selection, not only by the suitability from a chemical standpoint, but also from the availability of supply and upon the cost.

We first take up the subject of starches and flours, which constitute the main body of the mix. In this country, corn starch is the leader, while in European countries, potato starch is used mainly. This is due to the fact that in this country corn starch is less expensive, and abroad potato starch is cheaper. Up to about twenty years ago, principally in England and Belgium, wheat flour was used more than the starches. The difference, as you know, between the flour and starch is: flour contains gluten and mineral salts, as well as starch. Starch is the flour after the gluten has been removed by washing treatments, it being heavier than the starch—the starch can be floated away from it. Gluten is a gummy substance, as its name indicates and is not objectionable as far as its physical state goes for sizing, but as it easily ferments the process of preparing is a complicated one. I might say that right here probably lies the basis for all adverse criticism. It was often steeped as long as two weeks in a solution of forty per cent zinc and magnesium chloride before it was used, but since the advent of starch, these preparations have been decreased and so far as our experience goes, the preparations used by the manufacturers of size today are entirely safe and beneficial.

Starches are easily identified by their appearance under a microscope. They are made up of cells and each grain of starch has a different looking cell. The starch, as you know, is added to give a binding quality and body to the film. It also serves the purpose of keeping the fats in emulsion. Different starches are used for different weaves and finishes, according to their properties. Up to the present, starch, due to its availability and cost, serves this purpose better than any other available material. However, the time may come when some other material, or even starch itself in a modified state, may take the place of the starch now in use. While on this subject I would like to go into the question of the cooking of starch and try to picture to you just what you are doing when you are cooking your starch.

Cooking the Starch.

Try to think of each little cell of starch as composed of an outer coating of material in the form of a little sack, such as a rubber balloon enclosing another substance in the form of a powder or chalk. This outer coating has a tendency of letting water through to the inside, which causes the cell to swell and finally break. The hotter the water or temperature at which you cook, the more these cells swell and break. You can, however, as you would a balloon, break these cells by such means as striking them either one against another and against the sides of the kettle. This outer coating is the part of the starch which gives it its viscosity and by getting them broken and intermingled with the powder on the inside, you get a mixture that films well; however, if you break these little outer sacks into small pieces, after they have once been punctured, you gradually lose your viscosity. In the laboratory it has been demonstrated that by sufficient agitation alone, these outer cells have been broken into such small pieces that the viscosity of the starch was altogether lost and its filming properties thereby seriously impaired.

There was some discussion in the meeting last night as to how long you should cook starch. With the foregoing picture in mind, you can readily see that it depends entirely upon the chemical stirring and upon the thickness of the size mix and also on the starch itself. You can readily see the importance of having uniform stirring in your size kettles, as well as uniform heat. The thicker the mixture, the more difficult it will be to strike these sacks mechanically and therefore, the longer it will take, everything being equal, to cook the starch. Also, the tougher and thicker the sack, the longer it will take to break it down and as different starches have different thicknesses, the cell sacks of some starches will require longer to cook than others. In the laboratory we have made experiments and find that with one per cent solutions and sufficient agitation, we could completely cook the starch in ten minutes, but in the proportions used in the mills, it usually requires from one to two hours. The thicker boiling starches requiring longer cooking than the thinner boiling ones.

Potato starch, being naturally a thick boiling starch, requires longer cooking than thin boiling corn starch. Personally, I consider starch cooked when it reaches the point where it gives good filming properties—any subsequent cooking will only tend to materially thin it down.

The Gums and Glues.

The next group of materials we will consider are the gums and glues. These are added to bolster up the viscosity and binding quality of the starch. They can be added to make the film more elastic and tougher, which would therefore, bind the fibers closer to the yarn. They also tend to hold the greases in emulsion. There are a number of gums available in nature for sizing, viz.; gum arabic, gum tragacanth, gum dragon, cherry tree gum, sea moss, Iceland moss and many others, all of which are extracts from trees, shrubs, seeds and plants. On the other hand, a great variety of manufactured gums can be made by the chemical treatments of starches. Among gums manufactured from starches we may cite: First—dextrines. Largely thin, readily soluble and, incidentally, used on envelopes, postage stamps and the like. Second, apparatines. These usually occur in a more gummy form, all the way from fine paste to a substance which resembles artificial rubber. The dextrines are made by an acid or heat treatment, while the apparatines are made by an alkaline action or basic salt action on starches —most of the sizing manufacturers use one or both of these groups of gums.

We now go to the next group of ingredients known as lubricants or softeners. Under this head come tal-

lows, waxes and oils. Tallow is the basis of practically all the lubricating material used in size. It is available in quantity and is fairly cheap.

Lubricants or Softeners.

Last night the question was asked: Why should you use a sizing compound when tallow alone will do? The answer is this: Tallow itself is a very poor lubricant at high temperature and is not as viscous as it should be. As the mechanics of a good lubricant depend upon its viscosity, the idea being to separate two surfaces and overcome friction—you can readily see that tallow is not ideal for this purpose. By the addition of certain waxes and oils, however, you may secure the penetrating action of the tallow and still increase its lubricating properties on the surface. You remember I said in the first of the talk we tried to keep a soft core, and tallow will hardly do that.

Here I would like to emphasize that tallow used in size compounds should be the very best tallow obtainable, I would not advise anyone to economize on tallow. We use Grade "A" edible tallow, and if you get this from a reputable concern, it is usually free from all odor and fatty acids—it is sweet and neutral. Beef tallow is the principal tallow used. We find for some reason that tallow from field-fed cattle is superior to stall-fed cattle. One theory is that animals exercising in the sun sweat out more impurities from their bodies. This is getting too deep in the matter for me, however, the fact remains that the field cattle tallow is superior.

The oils most generally used in sizing materials come under the head of mineral oils, animal oils and vegetable oils. Mineral oils, if properly selected, to my mind are the most valuable of these products. Of course, there is a large variety of mineral oils—here the chemist's knowledge is invaluable for the proper selection of materials. Through its viscosity it aids the lubrication, it softens the natural waxes of cotton, which enables the bleacher to de-size more readily, using a one process boil, and it has no tendency to become gummy and rancid. Other oils are sperm oil from the whale, and tallow oil pressed from tallow—both are used and both are good. Among the vegetable oils are corn, palm, linseed, cocoanut, olive, castor and others. Linseed oil and other seed oils should never be used in size, if, like linseed oil, they have the property of absorbing oxygen from the air and becoming gummy. Cocoanut oil, while quite satisfactory, becomes rancid and imparts a disagreeable odor to the cloth. Castor oil is often used but usually in the sulphonated state.

I might add that some kinds of mineral oils by themselves might give a great deal of trouble but in an intimate mixture of other saponifiable fats they are most valuable.

The Waxes.

The principal waxes used are: paraffin, Japan, candellilla, carnauba, palm, etc. Japan wax seems to hold the lead. It is extracted from a plant in Japan, is hard and light yellow in color. It is readily removable during the process of finishing and is very good in giving the desired feel to the cloth. Soap is sometimes used in this group but it has the properties of foaming and does not combine successfully with other ingredients in the size mix and should therefore be avoided.

The Chemicals.

We now go to the group known as the chemical group and this, in my opinion, is the most important from the size standpoint, because they are usually left out by people making their own material—but if added, are the ones which usually cause the most trouble. On the other hand, they give to the size mix qualities which are invaluable, both from the standpoint of good weaving and from the standpoint of economy. In the way of passing, let me tell of a case that happened. A manufacturer had an experience in which he was trying to make a dye intermediate but was unable to better a fifteen per cent yield on this certain product. Like a lot of people, who do not know what the cause of their failure is, he fired the superintendent and employed a new one. The new one could only obtain ten per cent yield, so he got the old one back again. After several months of experimenting, the superintendent came to this manufacturer and said, "I've got it"—he said he was getting an eighty per cent yield and when questioned as to how, he said all he did was to speed up the agitator in the "B" tank six revolutions a minute. No one could have figured this out scientifically—they had to learn it from experience. In our product, there are certain points in the manufacture where chemical tests will not avail and we are left to resort to the sense of taste. Only an experienced operator, who has acquired this could manufacture our product.

Under the head of chemicals there are three subdivisions: First, delinquescents, second germicides, third, a group which I will call transforming chemicals. In the old day before humidification systems were perfected, the deliquescents were used in greater quantities—now their main function is a a warning to the slasherman to keep him from baking the warp on the slasher. Glycerine and calcium chloride hold prominent positions. As stated, it is due to the chloride in raw cotton that ra wcotton owes its property of absorbing moisture. The chloride holds more mositure per pound than glycerine and gives a softer feel to the warp. Also, glycerine has no antiseptic properties, in fact, favors the formation of fungi when in weak solution.

Under the group of disinfectants there are a number of ingredients, most of which are organic, such as benzoic acid, formaldehyde, boric and salicylic acid. The chief object of these is, while they protect the compound, they are all volatile with steam or heat and boil away as the size is cooked. On the other hand, zinc salts are the best preventives. They do not go out with the steam and serve the double purpose of protecting the compound in the barrel and also the size on the cloth to which it is applied.

Now we come to the chemicals used as transforming agents. As previously explained, our theory is to

(*Continued on page* 187.)

Texas Mill Men Discuss
Slashing *and* Weaving

Reported by Robert W. Philip

THIS is the only complete report appearing of the discussion on slashing and weaving by the Texas textile men at their recent meeting in Dallas. Readers in other sections of the country will be especially interested in the details of the Texas discussion, and for that reason considerable space is devoted to this detailed report. Methods of cooking size, size compounds, weights of squeeze rolls, extended labor systems, conditioning filling and many other topics were discussed.

DISCUSSION on practice in slashing and weaving among Texas mills constituted the program of the semi-annual meeting of the Texas Textile Association. The meeting was held at the Jefferson Hotel, in Dallas, on Friday and Saturday, October 25th and 26th, and was attended mainly by superintendents and overseers of mills in Texas and adjacent states. Herbert A. Burow, superintendent, Consolidated Textile Corporation, Bonham, Texas, directed the meeting and discussion as president of the association.

There were several visitors from the Southeast, including Vassar Woolley, of Seydel-Woolley Co., of Atlanta, who addressed the meeting on the subject of preparing sizing for warps. There was no other scheduled address, and practically the entire meeting was devoted to round-table discussion on slashing and weaving subjects, which is reported practically in full in the succeeding paragraphs.

Methods of Cooking Size.

The first question asked, "What is your method of cooking starch? How long before using, and at what temperatures?"

J. R. Wikle, manager, Magnolia Cotton Mills, Magnolia, Arkansas, who was a visitor at the meeting, first gave his methods. "We put in the starch and cold water, and stir it for 15 minutes, and gradually raise it to a boil," he said, "and then we boil it for one hour. Then we put in the compound and boil the mixture for 15 minutes longer and then it is ready to use."

"We mix our starch in cold water and stir it by means of a little motor for 20 minutes," reported J. T. Clarke, superintendent, Pioneer Mills, Guthrie, Okla., another visitor. "Then we pump it up and put our compound in and cook it slowly for an hour, and then we use it. We have no thermometers or controls, but we try to boil as slowly as possible. I believe it would be better to have automatic controls or thermometers."

C. E. Elrod, overseer weaving, Dallas Cotton Mills, Dallas, said they cook the starch for an hour before using, putting in the water, then the compound, and boiling it. He keeps a temperature of around 212 degrees in the kettles and about 160-170 degrees in the size box.

The representative from the Itasca (Texas) Cotton Manufacturing Company said they mix their starch and Arcy for fifteen minutes, then turn the steam on and hold for 30 minutes under 190 degrees and then cook it for one hour. He said the starch and Arcy are together about 30 minutes before the compound is added.

S. L. Dean, superintendent, San Antonio Cotton Mills, was called upon, and said that on their coarse yarns, they use no compound, only starch and tallow, explaining that they mix the starch and water and bring to a boil, and then add the tallow.

Mexia Textile Mills were next heard from. W. F. Smith said they start with running 60 gallons of water in and then adding the starch, bringing it up to 105 degrees and then putting in the compound, then getting it to a boil as quickly as possible. He explained that they use a mixture of 50 per cent Pearl starch and 50 per cent thin boiling, and stated that they have thermometers on the kettles and size boxes. "We find that by bringing it up to 105 degrees and boiling it and pumping it to the storage tank, we get a good penetration."

Ingram Lee, superintetndent, Dallas Textile Mills, C. R. Miller Mfg. Co., Dallas, reported next. He said, "we run cold water in the kettles—about 106 gallons—and then we put in our starch and tallow and paraffin wax and glycerin all at one time, pumping it into the storage tank and stirring it. We bring it up to 210 degrees and cook it for one hour.

"We had an interesting thing happen," continued Mr. Lee. "We thought all along we had been cooking our size for one hour until Mr. Clarke (the general superintendent) got us some Bristol temperature recorders, which show the time and temperature involved. We put these on, covering the face of the instrument, so that the man did not know its purpose and went about in his usual way. We learned from this that he had been cooking some kettles not over 15 minutes, although he was perfectly honest about it. It merely shows that a man will often fool himself about such things.

"As soon as our size is cooked, we pump it up and use it right away. We do not have the circulating system. We use the size as long as we can (about an hour) and run another kettle in."

Mr. Wikle explained why he boils his starch and water before adding the compound. He said Mr. Weir, of Penick & Ford, Ltd., had showed him a long chemical treatise which explained that "if you put the compound in with the starch at first it may cause

a different reaction, and they advised cooking the starch up one hour. I have not noticed any great difference since I began doing this, except that I believe our shedding is a little less."

At this point Chairman Burow asked each of those reporting to give figures as to the composition of their size mixtures. Mr. Wikle reported the use of 70 pounds of starch and thirty pounds of compound, finishing 75 gallons.

Hugh S. Clarke, general superintendent, C. R. Miller Mfg. Co., reporting for the Waco mill, said "we use 72 pounds of starch (and also gum with the starch which the manufacturers claim is a concentrated starch) and 21 pounds of our own compound. We put it all in together, mixing the starch and water for 20 minutes and boiling for one hour."

The man from Itasca said they use 140 pounds of starch and 5 pounds 10 ounces of Arcy, with 16 pounds of compound, and 4 pounds of tallow, finishing 100 gallons. Mr. Elrod said at Dallas they use 76 pounds of starch and 27 pounds of compound, finishing 100 gallons, cooking one hour all together. Mr. Dean reported 110 gallons of water, 90 pounds of starch, and 12 pounds of tallow, boiling one hour.

At Mexia, Mr. Smith said, they use 90 pounds of starch and 30 pounds of compound, finishing 100 gallons.

Ingram Lee said, "we start with 106 gallons of water, with 120 pounds of thin boiling starch, 12 pounds of good edible tallow, 6 pounds of paraffin wax, and one pint of glycerine, finishing 150 gallons." Mr. Clarke said they use 100 pounds of starch, with 10 pounds of tallow and 4 pounds of wax, finishing 120 gallons, and cooking it one hour all together.

From Waxahachie Cotton Mills, the report was made that they use 90 pounds of starch, 12 pounds of compound, finishing 100 gallons, and boiling for 1 1-2 hours.

Dan H. Poole, superintendent, Sherman Mfg. Co., Sherman, Texas, read the following answer: "Our method of cooking starch is as follows: The required amount of water is run into the kettle, starch is then added. This is agitated for 10 minutes before the steam is turned on; 20 minutes is then given the mix to reach the boiling point. The compound is added just before the boiling point. The mix is then cooked for one hour at approximately 208 degrees before being pumped into the supply tanks, and 1 1-2 hours time is taken to cook a kettle of size.

"We have two mixing kettles, and the cooking is alternated between the two kettles in such a way as will give us a fresh kettle of size, pumped into the supply tanks, every 40 to 50 minutes. A temperature of 206 is carried on the supply tanks with 190 to 195 degrees on the size vats." Adding to this, Mr. Poole explained, "I find that my size doesn't boil at 212 degrees, but at 208 degrees, at 212 degrees it shoots out all over the room. We use 72 pounds of starch, 20 pounds of compound, and finish about 100 to 106 gallons."

P. J. Long, overseer of weaving, Consolidated Textile Corporation, Bonham, Texas, reported that they start with 170 gallons of water, and use 106 pounds of starch which is stirred for 10 minutes. Steam is then turned on and the temperature is brought to about 208 degrees, where it is cooked for one hour. Then 65 pounds of compound is added and the mixture cooked for another hour, finishing with 250 gallons.

Here Hugh S. Clarke told of a proposition where he had the same fabric being made in two mills, and found it necessary to have the two goods identical so they might be interchangeable on orders. "I went to one mill and they were using 100 pounds of starch, and the other mill was using 125 pounds of starch, with everything else the same, and in the mill that was using 100 pounds, they were getting the best feel. I worked at the thing about two weeks, and I found that the mill using 125 pounds was cooking for 1 1-2 hours, and at the other mill from 45 minutes to an hour.

"I decided I would try cutting down on the first mill, and when I did the cloth got so stiff you could hardly handle it; so we cut down 25 pounds on the starch. Then I started using the same amount of starch at both plants, cooking 45 minutes, then one hour and then 1¼ hours, 1½ hours and on up to 2 hours." He reported that when he passed 1¾ hours he got no additional benefit, and that finally he adopted one hour cooking, and saved 25 pounds of starch at one of the mills.

HERBERT A. BUROW, superintendent of the Bonham (Texas) Division of the Consolidated Textile Corp., who, as President, conducted the discussions at the meeting in Dallas.

"I notice the gentleman from Arkansas said he cooks his starch for an hour and then puts his compound in," continued Mr. Clarke, "cooking it for another 15 minutes. On the face of it this seems to have a lot of merit in it. We know that tallow is volatile at about 180 to 185 degrees, whereas starch cooks at 208 degrees, and I am going to try that out." Mr. Wikle repeated here that he had found less shedding at the loom when adding the compound later. Mr. Clarke suggested this might be due to the fact that, adding it together at the first, the tallow volatilizes and is lost. In this connection, referring to the experience he recounted, he said, "I found out that in the mill using 100 pounds of starch, they were boiling at 210 degrees, while where 125 pounds were used, they boiled at 208 degrees, which would indicate that the amount of starch in the kettle might have something to do with the boiling point."

"I find it is better to add the compound after boiling the starch," said Mr. Burow. "We boil the starch for one hour and add the compound and boil from 45 minutes to one hour more."

"I conducted about a seven weeks' test," reported Mr. Poole, "cooking from 40 minutes to 1 1-2 hours, and putting the compound in at 10 minute intervals —from the time we ran the water in until just about 10 minutes before the size was taken out. We found that we got a great deal better results, on our particular class of goods, by adding the compound at just about the boiling point. Putting it in after it boils has a tendency to make it swell up and difficult to hold down, and it is the reason we do not put it in later. The appearance of the goods is better and it has a softer feel, and several other things in addition made me believe that the later you add the compound, before the boiling point, the better results you will get."

At this point James Clarke pointed out the impracticability of arriving at arbitrary methods of doing this work, because, he said, for one thing, the character of the water at each individual plant has a great influence on the conditions. He said they have

DAN H. POOLE, superintendent of the Sherman Manufacturing Co., Sherman, Texas, who is secretary-treasurer of the Texas Textile Association.

recently installed a water softening equipment, and that "we now can put on a great deal more size with less shedding than before when we were using relatively hard water." Chairman Burow agreed with him, saying, "I do not doubt that the water has a great deal to do with it, because at Bonham we use two kinds of water, taking it from a reservoir and also using city water, and we can tell a great deal of difference. With our lake water we do not have to cook our size as long as we do with the city water, and it gives us a better sizing, but we can use the lake only in good weather." He asked at this point for members to report as to the percentage of size applied to the warp.

Slasher Speeds and Steam Pressures.

The chairman next asked, "To get the best percentage and penetration, which do you consider best, running the slasher at high speed with additional steam pressure, or low speed with low steam pressure?"

At the first response to this question, Mr. Wikle stated that he applied from 15 to 16 per cent size on "Arkansas" broadcloth. James Clarke reported that tests had shown that on osnaburgs, his percentage showed about 9 per cent based on the added dry weight of the cloth. Itasca reported the application of 16 per cent. Mr. Elrod of the Dallas Cotton Mills said they are now using a new kind of a sizing compound which gives them about a 11 per cent increase. Mr. Dean said that, using starch and tallow, he puts on about 10 per cent, while W. F. Smith of Mexia, said they try to get around 20 per cent. Ingram Lee reported the application of about 11 per cent on 14s yarn, and the other figures reported ranged around 10 to 12 per cent, with one or two stating that they put on about 24 per cent.

At this point, Mr. Wikle asked for the different mills' methods of figuring the net weight. He explained that his method is to take the amount of cotton opened, and the cloth produced, and considering the stock in process, to arrive at his net weight figure in this way. He said his will figure around 9 per cent. Mr. Lee reported about 8 to 9 per cent on Middling cotton, and Mr. Clarke reported 12 per cent on Low Middling cotton. J. H. Hook, superintendent, Corsicana Cotton Mills, Corsicana, Texas, said, "I believe that last year our gross waste was about 18 per cent, and our net waste between 9 and 10 per cent."

Mr. Wikle next asked how the different mills arrived at the amount of size applied to the yarn. Mr. Burow and several others reported that they figure this "from the set," and Mr. Wikle said that he had checked it both in this manner and in the laboratory, and had found that they compared rather closely, the difference being the difference in moisture content.

The next question asked for the different methods and opinions as to whether it is better to run a slasher at high speed with additional steam pressure, or at a lower speed with low steam pressure. James Clarke said that he prefers low speed with low steam pressure. J. R. Wikle reported a speed of 25 yards a minute, with from 2 to 4 pounds steam pressure. Mr. Wikle uses temperature control on the slasher. James Clarke added that they run their slasher as slow as it will go, consistent with production, and never have over 3 pounds steam pressure.

W. F. Smith of Mexia, said they run with high speed and high pressure, about 45 yards a minute with from 8 to 10 pounds pressure, on 2,120 ends of warp for 8-ounce duck. However, he said, he has a 3-cylinder slasher. Grover C. Dilling, superintendent, Brazos Valley Cotton Mills, West Texas, said that the speed of the slasher and the steam pressure depends to a large extent upon the yarn number as well as upon the number of ends in the warp. He runs 3200 and 3400 ends, for duck, and carries a pressure of around 12 pounds.

Ingram Lee said they run their slashers at the slowest possible speed, with from 5 to 7 pounds pressure. The gentleman from Itasca reported the use of a 3-cylinder slasher which is run at 20 yards a minute with about 12 pounds steam pressure.

Herbert A. Burow, of Bonham, said they run the slasher 24 yards a minute with a steam pressure of from 5 to 8 pounds.

From the Dallas Cotton Mills, Mr. Elrod reported that one slasher is run at a high speed with 14 pounds steam pressure, turning off 60 yards in 2 minutes and 10 seconds, while another slasher is run with 10 pounds pressure, turning off 60 yards in 2½ minutes.

At this point Mr. Poole from Sherman read the following answer:

"There are many elements that enter into the consideration of this subject, such as local conditions, results necessary to obtain, condition of equipment, etc. I believe the question is to the point, and simply asks how different results can be obtained.

"In my opinion, and from actual tests, better penetration and percentages can be obtained by running the slasher at a speed as low as possible, with reduced steam pressure, as is consistent with the yarn numbers being run and the results desired. The following are the results of a test made sometime ago, the size in the vat being the same in both instances. In the first test, with 9.60's warp yarn, and 2,970 ends, we ran a speed of 27 yards per minute, with 12 pounds steam pressure, and got a size or regain of 11.84 per cent. We carried this test on to the weave room, and found that the end breakage on this warp averaged .88 stops per hour on a 40-hour test.

"The other test was run with the same warp yarn and the same number of ends, but the speed of the slasher was reduced to 20 yards per minute, and the steam pressure brought down to 7 pounds. On this test we got a size or regain of 12.47 per cent, and in the weave room, this warp showed an average of .77 stops per hour on the same 40-hour test. Laboratory tests were not obtained, neither were tests for breaking strength made."

Summing up the discussion, Mr. Burow said, "I do not doubt that all of us run at as slow speed as we can, provided our equipment will allow us to do so. That seems to be the general sentiment of the meeting here."

Percentage of Size Applied to Warp.

"What percentage of size do you consider best for warp yarns, to get good running work?" was the next question which was submitted. This had been covered to some extent in previous discussion, but some further interesting thoughts were developed at this time.

W. F. Smith, of Mexia, said "We have made some tests on three different sizes of yarn, and we have found that 16 per cent on 9s give best results; 14 per cent on 12s; and 18 per cent on 7.80s yarn."

"I have experimented with this quite a bit," said Hugh S. Clarke, "and I believe that you can go anywhere from 10 to 25 per cent, and have just as good running work, provided you get the proportion of the softener in the correct balance."

"We started out with 12 per cent, when we started up our mill at Magnolia about two years ago," said Mr. Wikle, "and we had a lot of trouble. You see, on broadcloth, we have 100 ends to the inch in the warp, and the chafing on the reed in the loom gave us a lot of difficulty, and we had to increase the percentage of size in order to get good weaving. I do not believe you can run with good results on 32s warp with less than 16 per cent size."

"I think about 10 to 11 per cent is all that is necessary on our work for good running work and for making a good piece of cloth," said C. E. Elrod, of the Dallas Cotton Mills.

"On 9s yarn we figure about 15 to 16 per cent, and on 14s about 14 per cent," reported the representative from the Itasca Cotton Manufacturing Company.

'I agree with Mr. Clarke on the runnning of the work," said W. L. Smith, "provided you have the right amount of humidity. The more humidity you have, the more size you will get on your warp."

"Well," said Hugh Clarke, "For the past four years we have had a loom running at the Cotton Palace down in Waco, with no humidity at all, and even with a North wind blowing in on it, and that one loom seems to run a lot better than those do at our mill that have 70 per cent humidity."

Mr. Burow reported the use of 10 to 12 per cent on 8s to 12s yarn. Mr. Wikle pointed out that the sley of the goods has something to do with the size, because on 80 x 80, he said that when he was in North Carolina he had run up to 24 per cent size and had gotten good results.

"I had a problem running colored osnaburgs, which is also called furniture cloth," reported Mr. Clarke. "They wanted it just as soft as they could get it, and I found that by putting in about four pounds of paraffin wax, this would lubricate the yarn and assist greatly in the prevention of chafing in the loom."

Width of Blankets for Slasher Rolls.

The chairman next brought up the question of the width of blankets being used on slasher rolls. He explained that the average slasher in Texas carries a 60-in roll, and that the man who suggested the question had recently found that he had been purchasing, for no particular reason, cloth some inches wider than this, the excess width going into the making of "shoe-shine rags" and other purposes, being torn off the side when the blanket was applied to the roll.

"We have a 60-inch cylinder," reported Ingram Lee, "and for some time we had been using a 62-inch blanket, but we have cut this down to 60-inch, and use three yards to the roll, using an 18-ounce blanket."

W. F. Smith said that at Mexia they use a 62-inch cloth, 18-ounce, 3 yards to the roll. He has a 60-inch slasher. Percy Long of Bonham also uses 3 yards of 18-ounce cloth, 62 inches wide, for a 60-inch cylinder.

The representative of Waxahachie Cotton Mill said they use a 16-ounce blanket, 58 inches wide, 5 yards to the roll.

"We have 60-inch blankets, and we use two blankets to each roll," said J. R. Wikle. "We change one blanket. We have 3 1-2 yards to each blanket, making 7 yards. We do not run a new blanket on the front, but run it on the back for about a half a day."

From Itasca, the representative reported the use of two blankets, 18-ounce, 4 yards to the blanket, 60 inches wide. It was brought out here that the majority of the mills use only one blanket instead of two or more.

J. H. Hook, superintendent, Corsicana Cotton Mills, was called upon, and said, "We clean our rolls twice a year, and paint them, and then we put on 5 or 6 yards of a 60-inch osnaburg, and then we use 2 blankets of about 3 1-2 yards each. These blankets

are 18-ounce. We tear about one inch off each side." On the back roll, Mr. Hook continued, they fix it the same way, but do not use a blanket, applying instead burlap. Also, he said, when he changes blankets, he runs the new blanket underneath.

Hugh S. Clarke said that his warps are indigo-dyed, and that he has to change blankets after 20 hours of running. He uses 18-ounce cloth 60 inches wide.

"We use a 62-inch blanket, 3 yards to the blanket, 18-ounce," said Mr. Elrod of the Dallas Cotton Mills.

The next report was from D. H. Poole, who said, "Our slasher rolls are first wrapped with about 12 yards of sheeting, and over this we use 5 yards of 16-ounce, 60-inch slasher cloth, which we have found gives us all the cushion necessary for our particular yarn numbers. We have tried various weights, and while we have found them all fairly satisfactory, we standardized on the 16-ounce, because the lap would feather out better than on a 20-ounce weight, and it also gives us a more circular roll, particularly just after a new blanket has been put on."

Here Mr. Clarke brought out the point that the distance between the beam heads on his beams is only 58 inches, and suggested the possibility of using a slasher cloth no wider than that. Mr. Burow and others, however, pointed out that it is necessary to have the cloth somewhat wider than the beam to allow for the slipping of the ends on the slasher, and to allow for "play" on this machine. Mr. Burow here pointed out the wide difference in the yardage of cloth used by some of the mills.

Changing Slasher Blankets.

"We use one blanket," said Hugh S. Clarke. "We start out with 10 yards of sheeting, and then we put on about five or six yards of cloth, with a cotton warp in it. This gives us a pad. Then we put on two yards of cloth, and that gives us a little better than one wrap. We have to change this every 20 hours, because we have to be careful on account of running indigo warps. We change the padding underneath about once a month."

"How many men change their slasher blankets every day?" asked Chairman Burow. No one reported this practice, but several of the men reported changing them once a week, while a greater number said they change them every two weeks.

"How about the possibility of washing out the blankets?" inquired Mr. Clarke.

"Sometimes we run our blankets one way, and then reverse them, with the one side on the bottom," explained Mr. Wikle. "We usually do that every set, and it runs about a week."

Mr. Clarke explained that his indigo warps are caustic, and that this has a tendency to eat the wool in the blankets, which requires frequent changing.

In connection with covering slasher rolls, someone made inquiry as to the method of covering the rolls with a worsted yarn covering. "I saw this in operation at the Avondale mills in Alabama when I visited over there this year," said Mr. Wikle, "and they seemed to like it, although they did not point out any particular advantages except to say that it prevented the lap in the ordinary covering, which prevented the streaks coming from this source."

"I also saw these there when I was in Birmingham at a meeting," said Mr. Clarke, "and another advantage which they showed me was that the traverse motion for winding this yarn on the roll is mounted just above the warp, and instead of having to stop the slasher to re-cover the roll, you simply let it wind on while you are running the set. When the roll gets too large, you cut it off a little and start all over again."

W. F. Smith said the Houston Textile Mills are using this method of covering slasher rolls, and that they find it an advantage in eliminating the customary lap on the usual system of covering. This lap, he explained, was objectionable in the subsequent napping of the blanket goods which they manufacture.

Weight of Squeeze Rolls on Slashers.

"How do you determine the proper weights of squeeze rolls for different yarn numbers?" was the next question asked.

Mr. Wikle says that on 32s warp, for broadcloth, he uses a 400-pound weight on the back of a 350-pound weight on the front.

"We use different weights on our squeeze rolls for different numbers of yarn," reported Mr. Burow. "On our sheeting yarn, 22s warp, we are using a 330-pound squeeze roll on both the back and front. Sometimes, however, we have to run duck warps on this same slasher, and when we do, we increase the weight of the rollers up to 550-pounds on the front roll only. I have found that by doing this we get a nicer piece of cloth than we do without the additional weight. It seems to give us better penetration, with less shedding, and a smoother-looking piece of goods.

"Instead of having to change the entire roll, we worked out a lever arrangement, whereby the additional pressure is created by the application of extra weights at the end of this lever."

"I had it explained to me once that the reason for using a heavier roll on the back is similar to the principle for soaking up water with a sponge," said Mr. Wikle. "It was explained to me that if you submerge a sponge in water, when the sponge is dry, it will not take up as much water as it would if you first wet the sponge and squeezed it out and then put it in the water. This same principle, they tell me, is applied when you have the back roll a little heavier than the front, as it will squeeze the yarn out and make it possible for it to take up more size at the second squeeze roll."

Why Use Size Anyhow?

"On indigo warps, we have, in the vats, squeeze rolls weighing up to 1200 pounds, with half an inch thickness of rubber covering, and it doesn't seem to hurt the yarn, so I don't see why more than 300 pounds on the slasher could hurt it. We put on 500-pound rolls and like them very much."

The next discussion was based upon the ques-

(*Continued on page* 229.)

A New Textile Abrasion Machine

Abstract of Description of New Machine Presented at Providence Meeting of Committee D-13, American Society for Testing Materials

By George B. Haven*

WHILE YOUR MILL may not in the past have tested fabrics for wearing qualities, this requirement may be imposed or be made advisable at any time, so that you will be interested in this discussion of a method developed at the Massachusetts Institute of Technology, which may be made practically with your own facilities, upon information available free of charge from Professor Haven, who wrote this description.—THE EDITOR.

THE ABILITY to measure the resistance of fabrics to wear is naturally of great importance to the textile industry. Numerous types of apparatus have been designed during the past twenty years to measure this quantity. Many obstacles have arisen in the development and use of these machines.

First, in order to measure abrasive resistance accurately, a uniform degree of wear must be produced over a considerable area of fabric. If by reason of the peculiarities of the machine, local irregularities are produced in the worn fabric, the results will be untrustworthy and cannot be duplicated with the same fabric again. Second, the character of the abradant has much to do with the success of such machines. In the Institute laboratories numerous materials have been used for this purpose. At first, it was believed that very smooth glass rods would produce even and measurable wear. After three days rubbing, however, the threads in the cloth were found to be beautifully calendered and evened up in their position so that the fabric was a few pounds stronger than before the rubbing. Round files were tried and quickly reduced the fabric to rags. Carbon pencils loaded the fabric with particles of the same and no result was attained.

For a considerable time it was hoped that the fabric itself could be used as a rubber and elaborate machinery, embodying these principles was built by the author, in the Institute laboratories. It was found, however, that the friction between the two pieces of fabric caused an electrical condition which made the lint adhere and clog the surface of the cloth. Results of fair character were obtained by this means but it was impossible to duplicate such tests with any degree of accuracy upon the same fabric.

Other experimenters have tried emery powder, glass dust, and free abrasives of this character but with only fair success. At length, a standard grade of emery cloth known as 3/0 was tried for this purpose with considerable success. Under the microscope, emery cloth of this kind is very uniform and accurate. When lightly rubbed against the surface of any fabric a uniform degree of wear is produced. The particles of fabric instead of loading the abradant, adhere to the upper portions of the emery particles and are automatically discharged into the atmosphere by the action of rubbing. Of course, a new piece of emery cloth must be used for each individual abrasion test and the emery cloth must be so mounted in the machine as to present a perfectly even surface against the fabric. If the emery cloth is in any way uneven, it will streak the fabric which will naturally ruin the results.

At the same time the rubbing takes place there must, of course, also be present a certain degree of flexure. This of itself will produce a certain amount of internal wear in every fabric, the thicker the fabric the more so. Also bending the fabric around a radius

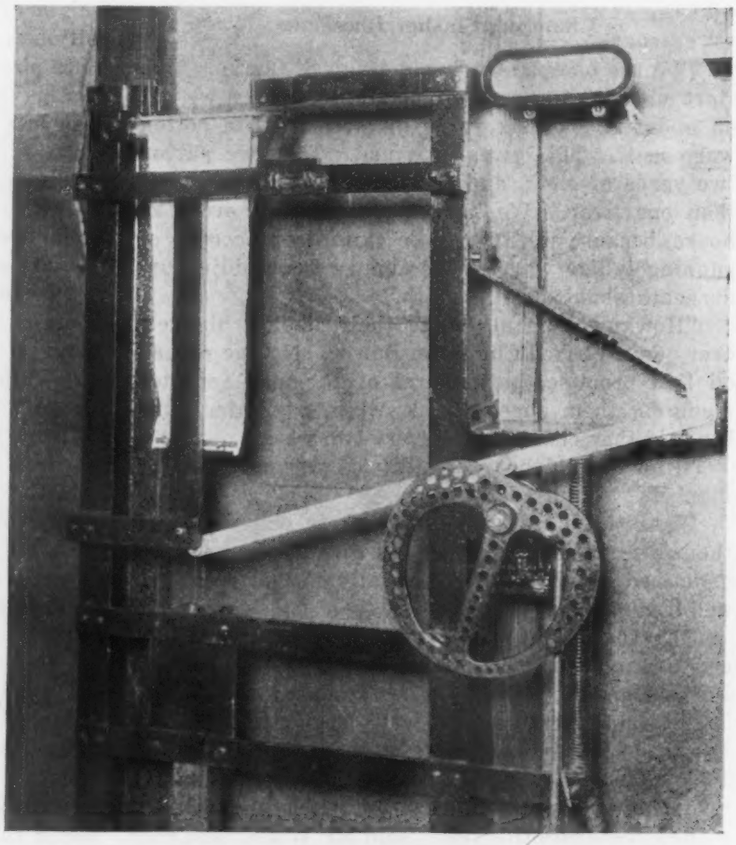


Fig. 1. Showing close-up of abrasion machine and details of cam outline.

*In charge of Textile Laboratory, Massachusetts Institute of Technology.

subjects the same more accurately to the action of the abradant. The radius around which the fabric is bent must, of course, be adapted to the character and thickness of the material under test. For carpets, plushes and heavy upholsteries, the best diameter of flexing roller has been found to be one inch. For dress goods and those of considerable thickness, a half inch flexing roller is best adapted. For very light fabrics such as garment linings, glider and wing fabrics and the lighter grades of sheeting and sugar bagging, a ¼-inch flexing roller has been found to work very well.

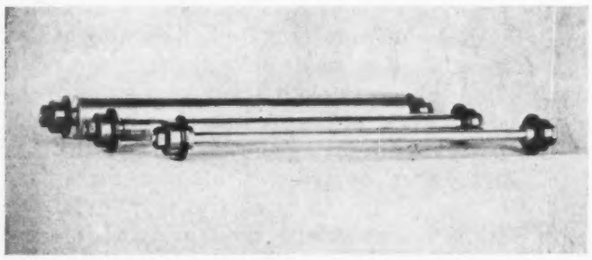


Fig. 2. The Flexing Rollers.

No attempt has ever been made, to the author's knowledge, to reduce abrasion tests to absolute units. There are so many variables such as the character of the abradant, the diameter of the flexing roller, the number of abrasive strokes per minute, the temperature and humidity of the atmosphere, the degree of tautness of the fabric, the pressure upon the abradant, and the subsequent treatment of the worn specimen, that a great amount of specification would be necessary first before absolute results could be obtained. It is, however, a fairly easy matter to make comparative tests on a group of fabrics of similar character. The above conditions can then be kept uniform throughout a reasonable period of time and the results form a fair basis of comparison of the resistance of

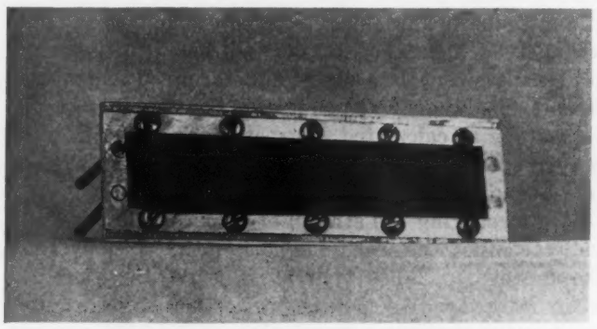


Fig. 4. The Abradant or Rubber.

the various fabrics to wear. The above variables have been in a degree standardized for general use in the Institute laboratories and are as follows:—

I. 3/0 emery cloth has been used for all fabrics except carpets and materials doped or coated with a gummy substance. For the latter, standard 2/0 garnet paper has been used.

II. For fabrics up to seven ounces per square yard a ¼-inch roller has been found satisfactory. For fabrics between seven ounces and 15 ounces per square yard a ½-inch roller has been found satisfactory. For heavy fabrics, carpets and coated or gummed materials a one-inch roller serves best.

III. With the machine illustrated in this paper, the limit of accurate use is fifty-five double strokes per minute. Much higher speed than this will cause the abradant to chatter and jump.

IV. All abrasive tests should be performed under standard conditions, namely 70 degrees F. temperature and 65 per cent relative humidity.

V. For fabrics not over seven ounces per square yard in weight, a tension of three pounds upon the strip under test has been found sufficient. For fabrics between seven and fifteen ounces per square yard, four pounds has worked well. For the heavy group mentioned above including coated and treated fabrics, a tension of five pounds is sufficient. The tension merely serves to keep the fabric flat upon the roller and give uniform results.

VI. The pressure upon the abradant varies with the weight of the fabric and the suggestion has been made to use the same weight upon the emery cloth as the number of ounces per square yard in the material. This has been followed fairly closely by the author, and has been found to be generally satisfactory.

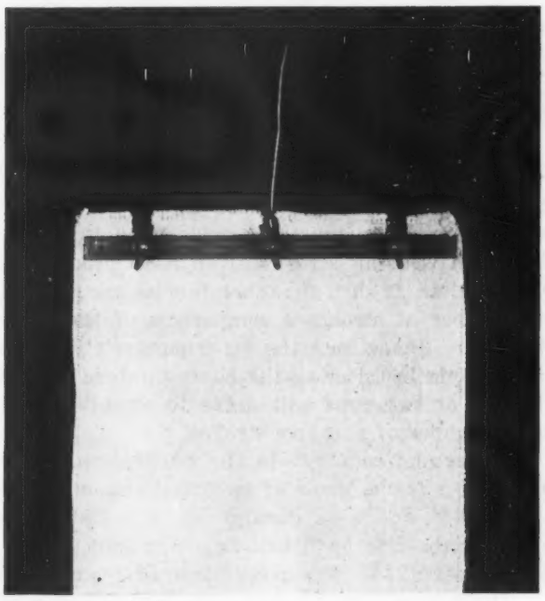


Fig. 3. The Cloth Clamps.

VII. The only scientific method of measuring the effect of abrasion appears to be by comparison of the tensile strength and stretch of the material before and after wear. Of course, the appearance of the material indicates in a general measure the effect. It is very difficult to measure the effect of wear in terms of the loss in weight of the material since the adhesions of lint are always indefinite. For this reason, the original fabric is tested in a standard manner for strength and stretch using the strip method. After wear, the fabric is again subjected to a similar set of tests and the reduction in per cent of the original value is a fair measure of wearing resistance.

The most difficult variable with which to deal in tests of this character is the total number of rubbing strokes. Some fabrics, of course, will stand very few while others will be but little injured by several thousand. In testing a group of fabrics for wear resistance, the experimenter must use his best judgment in

TABLE I.
RESULTS OF ABRASION TESTS ON GARMENT LINING FABRICS.

Standard Condition 70° Fahr. Room Temp. 65% Rel. Hum.

Specimen No.	Original Fabric Tensile Strength of Warp Lbs. per In. of Width	Original Fabric Tensile Strength of Filling Lbs. per In. of Width	Worn Fabric Tensile Strength of Warp Lbs. per In. of Width	Worn Fabric Tensile Strength of Filling Lbs. per In. of Width
		Fabric Number 1		
1	60.5	58.4	17.5	22.0
2	59.5	56.3	16.0	29.0
3	59.3	54.4	23.5	31.0
4	59.4	56.8	24.5	36.5
5	59.9	54.8	18.0	28.5
6	59.6	55.6	22.5	25.5
7	60.4	56.1	25.5	46.5
8	60.8	54.9	26.0	31.5
9	60.8	53.8	27.5	16.5
10	61.6	54 6	25.5	23.5
Tot.	601.8	555.7	226.5	290.5
Av.	60.2	55.6	22.7	29.1

60..2—22.7=37.5 lbs. or 62.3% loss of original warp strength.
55.6—29.1=26.5 lbs., or 47.7% loss of original filling strength.
Average loss in warp and filling 55.0%.

		Fabric Number 2		
1	42.4	54.4	22.0	9.0
2	42.3	54.0	12.5	12.0
3	42.6	54.5	12.0	15.0
4	40.7	56.7	18.5	14.5
5	53.1	56.8	25.5	14.0
6	43.0	53.8	11.0	15.5
7	43.3	53.0	16.0	17.0
8	41.4	50.8	11.0	19.5
9	42.8	54.3	15.0	20.0
10	42.4	56.4	16.0	18.5
Tot.	434.0	544.7	159.5	155.0
Av.	43.4	54.5	16.0	15.5

43.4—16.0=27.4 lbs., or 63.1% loss of original warp strength.
54.5—15.5=39.0 lbs., or 71.6% loss of original filling strength
Average loss in warp and filling 67.4%.

Fig. 5.

selecting the poorest and most easily worn of the group. A trial run must me made upon this fabric and enough wearing strokes given it to produce emphatic results. If then the other fabrics are given the same number of strokes a comparison of the results will be fair. Sometimes the experimenter's judgment will be wrong in selecting the poorest fabric but generally one or two runs will suffice to establish a reasonable number of abrasive strokes.

The machine as noted in the illustration, Fig. 1, consists of a frame made of two steel channels. The flexing roller, made of duralumin, is mounted near the top at the left upon ball bearings thus giving a prompt reversal and no perceptible drag upon the fabric. The fabric is hung over this flexing roller and gripped at one end by a clamp attached to a vertically guided weight. The free end of the fabric is attached to a vertical reciprocating crosshead by a similar clamp. The stroke of the cross-head is 18 inches and the same is caused by a duralumin lever pivoted at the extreme right of the machine. The cross-head is linked to this lever by a short connection so that there is no lost motion or irregularity in the velocity of the cross-head. The reciprocation is produced by a heart cam bored for lightness and mounted upon the axis of a reducing gear. The outline of the heart cam is carefully designed to give 1½ inches of acceleration to the cross-head, 15 inches of uniform vertical motion and 1½ inches of deceleration at the upper end of the stroke. In this manner 15 inches of the central portion of the fabric is given a uniform velocity of abrasion. By past experiments, it has been proved that an acceleration or deceleration of the abrasive gives discordant results and is generally undesirable. Therefore, 1½ inches of the worn portion of the fabric is excluded from the tensile tests in this work, at each end of the specimen.

Three different diameters of rollers, Fig. 2, are kept at hand to serve the needs of a wide variety of fabric as outlined above. These rollers are readily inserted in the machine and are provided with non-detachable ball bearings. The cross-head is guided vertically in a T-slot. The clamps used to hold the fabric, Fig. 3, are merely flat pieces of cold rolled steel held together by small bolts with wing nuts. The piece of fabric should be 7 inches wide by 26 inches long for use in this machine. The rubber or abradant, Fig. 4, is a piece of emery cloth smoothly attached to a rocking plate. Ten small bolts through the plate serve to bind the emery cloth firmly in position without wrinkles. Fixed in the rocking plate at each end are two posts loosely fitting the top bars of the machine. As the abrasion proceeds this plate rocks back and forth thus serving to bring two portions of the emery cloth into contact with the fabric and to expel large amounts of lint as well. Besides rocking this plate has a slight longitudinal motion so that small irregularities in the emery cloth will not be perpetuated in the worn fabric.

The fabric to be tested is first thoroughly conditioned and given a standard strip test for strength and stretch. This is considered a base value. Similar quantities after abrasion are determined and their relative values expressed in per cent. The reduction in strength rated in pounds of the base value gives the percentage resistance to abrasion. In the same manner stretch diagrams are taken from the worn specimens and their stretch rated in terms of that of the original material.

In calculating the loss due to abrasion the following method should be followed. The average tensile strength after wear should be subtracted from the similar value before wear. This gives the loss in strength due to abrasion. Next by calculating the percentage which this loss in strength bears to the original tensile strength, a figure is determined which represents the wearing capacity of the fabric. If the percentage as calculated is great the loss due to wear is correspondingly great and the resistance to wear is correspondingly low.

By measuring the stretch of fabrics it is generally indicated that the worn fabric is more stretchy than the unworn. The stretch at rupture, therefore, in worn fabrics will generally be found to be a greater per cent of the gauge length than that of the unworn material. This excess represents the effect of abrasion and the difference between the two stretch percentages given above will represent directly the loss due to wear.

Such tests as these are of much importance in determining the relative superiority of a group of similar fabrics in resisting wear. To illustrate the use of this machine two typical tests are appended. These were both made upon garment linings of similar weight and general appearance but of totally different physical characteristics. The full detail of these two tests is given in the accompanying table and shows that Fabric No. 1 is much more resistant to wear than Fabric No. 2. A group of fabrics tested in this way

will show very plainly relative superiority. It is believed to be a fair thing to average the loss in warp and filling in order to gain a just idea of what the fabric will do under general conditions of use. Naturally fabrics having a preponderance of floats or visible top threads will stand considerable wear lengthwise of these threads. When rubbed crosswise, however, the wear is equally destructive. An average should therefore be taken.

The machine used for this type of work is not at all of expensive construction. All portions of it can be built by ordinarily good mechanics with the exception of the ball bearings. The latter of course can be purchased readily on the open market. It is the hope of the writer that many concerns will build for themselves this type of machine and make a study of their productions from the standpoint of resistance to wear. Machines of this type have been used for many years in the textile laboratory of the Institute of Technology and it is believed by the undersigned that such machines have never been patented and are not patentable.

The design of the cam naturally has to be carried out with considerable care. If the cloth moves with varying velocity the wear upon it will not be uniform. The cam outline is designed to give a uniform acceleration during the first one and a half inches of cloth movement. Fifteen inches of uniform cloth motion then follows, and lastly a deceleration of one and a half inches takes place. As explained, the central portion fifteen inches in length should alone be used for the abrasion tests.

If any concerns contemplate building this machine they are requested to communicate with the author. Full blue print details may be secured from the Textile Laboratory of the Institute at cost. A template for the cam outline, full size, is also included and printed instructions for operating the machine and making all the necessary calculations. It is believed by this means that numerous textile concerns can study their own products with regard to wear and answer their own questions in this direction.

The effect of atmospheric conditions upon wear has not been thoroughly investigated. As a matter of course standard temperature and humidity conditions are always used at the Institute in tests of this character. When a comparison of but two or three fabrics is desired it is in all probability sufficiently accurate to condition the several fabrics side by side to a general state of uniformity, and then to proceed with the tests as rapidly as possible. This at least gives fairly uniform conditions provided the tests can be made within a reasonably short period of time.

Sloan Elected Institute President

Mills Indicate Plans for Curtailment

AS INDICATED in these columns last month, George A. Sloan has been elected president of The Cotton-Textile Institute, Inc., succeeding Walker D. Hines, who becomes chairman of the board of directors. This action was taken at a meeting of the Institute's executive committee in November. The executive committee chose Paul B. Halstead as secretary to succeed Mr. Sloan, and created the new office of executive vice president, which will be filled by William Raymond Bell.

Mr. Sloan has been identified with the Institute as secretary ever since its activities were organized in October, 1926. Prior to that time he had been for four years secretary of the Copper & Brass Research Association. He is 36 years old and was graduated from the law school of Vanderbilt University in 1915. He was born in Nashville, Tenn.

Left, George A. Sloan, new President of Cotton-Textile Institute; Right, Walker D. Hines, retiring president, who becomes chairman of board.

DURING NOVEMBER, two meetings were held in the South under the auspices of the Cotton-Textile Institute, for a discussion of conditions in two important divisions of the industry. On November 12th, the print cloth and narrow sheetings group of the Cotton-Textile Institute met in Spartanburg, S. C., with 96,000 looms, or approximately 70 per cent of the looms on print cloths and narrow sheetings in the South, being represented. The discussions developed a very general appreciation of the importance of the mills avoiding overproduction.

Left, Paul B. Halstead, new Secretary of the Institute; Right, William Raymond Bell, the executive vice-president.

Following the meeting practically every mill representative in attendance indicated his purpose in view of the emergency to make a substantial reduction in his production. The announcements varied as to how this will be effected, but the minimum amount indicated will amount to 27 per cent. The action announced by individual mills was evidence that close attention is being given by an intelligent adaptation of production to present and prospective demand in the face of an emergency.

CURRENT TOPICS

Talk of the Month

FROM THE DAYS when hand spinning and weaving of cotton began to be replaced by machine methods, greater volume of production was the natural aim of manufacturers. When the volume of machinery and the output rate of spindles and looms were insufficient to the country's needs, there was only one thing to be done: produce, produce and produce some more. But the production of machinery and the growth of its producing power in yarns and fabrics have long since created a situation which has revolutionized cotton manufacture. These are elemental statements, but the stress today upon discussion of over-production makes fundamentals a prime consideration.

When You Overproduce, You Must Retrench

When the farmer expands his crop beyond the consumptive capacity, he must retrench. When the automobile industry finds the rate of production running ahead of consumption, it does retrench. If, as has happened, the consunmption can be stimulated by careful attention to methods in a way that can be reflected in reduction of prices, production is stepped up accordingly. But whatever the line, an industry as a unit sensibly must produce only as much as can be sold on a fair basis of prices. Other practices mean poverty on a wholesale scale, or ultimate decease.

Elemental facts can never be ignored and, whatever the direction discussion may take, these must be in the background of any program which will succeed. The recent weeks and months have brought into relief the question of how the industry as a whole can be induced to regulate production in a reasonable way. It has also been a time when the matter has been discussed of what can be done about night work in the mills. We stress fundamentals again and again in the present case, for the discussion of long hours—night work particularly—is an old story, but some factors in the industry seem not to read it and to realize that the industry has been revolutionized from the time when production was the logical by-word of cotton manufacturers.

Preventing Family Misunderstandings

Cotton mills constitute a great economic family and one which, no less truly than that of an ordinary household, is put in jeopardy by being divided against itself. There is salutary news in the recent reports from the annual fall convention of the National Association of Cotton Manufacturers regarding relations of employers with employees. Notable instances of northern and southern mills with their employee representation and economy dividends are examples of an encouraging development toward industrial democracy wherein all the members of the industry may work toward the one end of performing a valuable economic function for the whole population.

Herein is an individualistic problem, in that each unit of production contains its own separate family. It may be likened to one of the states as the form of mill government in one instance is likened to that of the United States. All the mills may well look into what has been accomplished in special cases, on this score, but it still remains for them to proceed as best suits their particular cases. Their own success may depend in considerable measure upon what is accomplished.

By contrast, united action on the matter of volume of production is a measure of co-operation for salvation rather than a competitive element in the business. As a competitive measure, it has proved disastrous. Long ago it was asserted by a prominent factor in the southern branch of cotton manufacture that night operation was unsound, although he himself was forced by competition to follow the practice. The point that, if one or a small number of mills could exercise the privilege of double shifts to the exclusion of the rest, the practice would be profitable bears reiteration. For it carries a corrollary that, without such privilege, the mill which starts the practice only leads other units into it and the concomitants of overproduction and lost profits develop.

Night Running and Curtailment

Some courageous souls in the industry have taken the bull by the horns and the recent period of slackening business and set their mills operating on curtailed schedules. The recent discussion of the problem, however, has turned on whether the industry is to become a single-shift or a doublt-shift one. It is felt that individual action cannot succeed in stemming excess output and the matter has reached a crux which showed itself plainly in the move to amend the by-laws of the Cotton-Textile Institute so that this body, the one organization representative of a large part of the industry, could participate in political activities.

Some force manifestly is needed to do what voluntary action will not do. While an industry may secure good business in increasing volume through lower prices, under favoring circumstances, cotton manufacturing is not in that class. Buying that is being stimulated today by price-cutting is considered to arise not from demand but merely from profferred bargains. And reports from the distribution market credit students of the markets with the finding that mills running day and night on print cloths and sheetings are among the first in a quiet period to make concessions when merchants are endeavoring to keep things stable.

Manufacturers at the National Association meeting in Boston heard that the coming census of distribution by the Government will have its primary value

Cotton Dollars

SAVING $250 TO $1000 ON EVERY 100 BALES
WOULD THIS HELP YOUR MILL?

CALIFORNIA-ARIZONA irrigated cottons will help your profits if you give them a fair chance.
Let us study your requirements.
Write to any of our selling offices or to our

Carolina Representatives, MATHEWES, CREWS & LUCAS, Inc.

E. A. SHAW & CO., INC.

ALWAYS SUNSHINE—ALWAYS WATER

SELLING OFFICES

Head Office
BOSTON, MASS.

Branch Offices
Atlanta, Ga.
New Bedford, Mass.
Fall River, Mass.
Providence, R. I.

SHIPPING OFFICES

LOS ANGELES, CALIF.
Chas. Provost, Mgr.

TEMPE, ARIZ.
S. J. Carter, Mgr.

in setting up a basis of facts which will aid in the control of supply and demand and that it is seen as a basis for relief from overproduction. Yet it is hard to see how the industry can be put "in balance"—where production and sales are matched—when the talk is that the mills must go from bad to worse if those holding to day-and-night operation is not induced into reasonable practices. For the talk is that the present system cannot continue: the industry must be all single shift or all double shift. What would come of the latter condition one hates to forecast.

Lighter trading in the fall has been aggravated by a combination of factors including the disastrous turn in the stock markets of the country. The position of raw cotton has been discouraging, in spite of the action of the Government through the Federal Farm Board in offering financial aid toward orderly marketing of the crop. The outlook for firmness in cotton has been considered fundamentally good, but temporary conditions have led to serious declines and the break in stocks securities itself precipitated the staple downward.

First results of the upset in stocks were not serious in cotton goods. By the time of publication of this discussion, the influence of the break may have become noticeable, or it will have confirmed the general impression of the soundness of general business in the country. The clearing of this question and the more definite indications of the prospects of supply, demand and price in raw cotton will soon place the industry where it can proceed toward the new year with these particular problems much alleviated.

Egypt Good Market for American Cloths

THE AMERICAN SHARE in Egypt's cotton piece goods market, one of the largest consuming markets in the world, has been increasing steadily in the last few years, Assistant Commercial Attache William D. Mann, Cairo, informs the Department of Commerce.

During the first half of 1929 the United States exported 2,291,000 square yards, valued at $369,000, to Egypt, compared with 1,778,000 square yards, with a value of $305,000 in the corresponding period of 1928—a gain of 28.8 per cent in quantity and of 20.9 per cent in value. Voiles comprised the most important item in these shipments and accounted for 1,980,000 square yards, worth $304,000, in the 1929 half year, as against 1,176,000 square yards, valued at $200,000 in the corresponding 1928 period—an increase of 68 per cent in yardage and 52 per cent in value.

Two New Knit Underwear Bulletins.

Two new underwear bulletins—No. 9, relating to children's models and types, bearing the title "What's New in the Stores," and No. 5, on the subject of men's knit underwear, under the title "Why Style in Men's Fall Knit Underwear?", issued respectively by the division of design and the division of Merchandising of the Associated Knit Underwear Manufacturers of America, have been distributed to buyers in the leading style retail dry goods and department stores of the country, as well as to others who might be interested.

Bulletin No. 5 describes very effectively the part that style is to play in aiding merchants to find the road to greatest underwear profits for the coming season.

Industrial Relations and Distribution Discussed at National Meeting

INDUSTRIAL RELATIONS, and distribution, style and sales topics featured the program of the annual meeting of the National Association of Cotton Manufacturers, held at the Copley-Plaza Hotel, in Boston, Mass., on October 30 and 31. The convention was well attended by representatives of New England mills and others.

Lincoln Baylies, of Amory, Browne & Co., was reelected president, with Philip Dana and Irving Southworth as vice-presidents. S. Harold Greene, Ernest N. Hood, Sidney S. Paine, Frank B. Ricketson and George E. Spofford were made directors for three years.

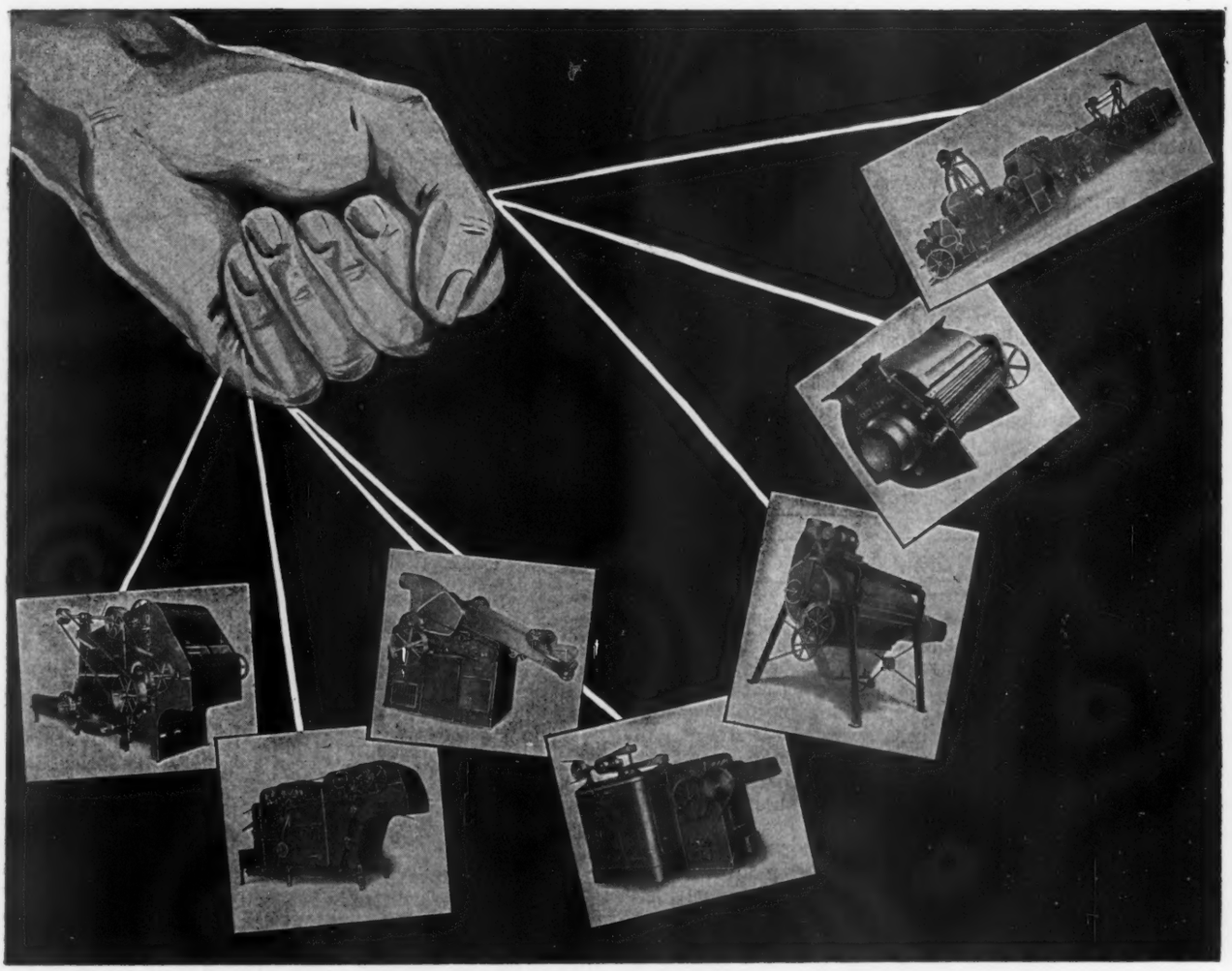
At the first meeting on Wednesday afternoon, October 30th, the subject of employee relations was covered. Frank P. Cox, general manager, West Lynn plant of General Electric Co., told of the activities along this line at his plant. H. Gilbert Francke, employee relations counsel of Pacific Mills, also spoke, and Clifton J. Parrott, of the Riverside & Dan River Cotton Mills, Danville, Va., and Lawrence Richmond, treasurer, the Crompton Co., Crompton, R. I., told of the results of the Industrial Democracy plan as operated at their plants—the former in the South, the latter in the North.

Employees practically become partners in the business, "economy dividends" are paid to the workers in addition to their regular wages, and there are savings for the mill, as well as improved quality of fabric, as a result of the plan at Crompton, according to Mr. Richmond. "We are convinced," he said, "that in the relations between capital and labor, industrial cooperation in some form is the ultimate and only satisfactory solution of an old, old problem. We have found in six years that our system of industrial cooperation has satisfactorily settled all the problems that have arisen between employer and employee."

Mr. Parrott described in detail a similar plan at Danville, consisting of a system of employee representation patterned after the United States government and including a House of Representatives, made up of elected delegates of the workers; a Senate, composed of the overseers and other key men; and a Cabinet, made up of the chief executives of the company; a system of "economy dividends," whereby savings effected through increased effort and greater cooperation are divided equally between the management and employees; and a systm of employee rating which expresses the individual performance of each man in the plant.

A theater party and style show at the Copley Theatre constituted the program for the Wednesday evening session.

Distribution, in various phases, constituted the theme of the Thursday morning session, with Henry G. Lord, of McGraw-Hill Publishing Co., presiding. Speakers were Frederick M. Feiker, manager director, Associated Business Papers, Inc., who discussed the coming census of distribution; Ephriam Freedman, of R. H. Macy & Co., who spoke on nation-wide research as a factor in consumer acceptance; S. R. Glassford, president, Association of Cotton Textile



SYNCHRONIZED CONTROL

DEFINITELY LOWERS OPERATING COSTS

ONE of the greatest cost-reducing developments of the century is offered by the Saco-Lowell Shops Opening and Cleaning Systems. With all machines, from bale breaker to finisher picker, under synchronized and automatic control, high production of better quality is assured. At the same time automatic conveyors and distributors materially reduce labor costs. Overhead costs are reduced in many directions.

The new Saco-Lowell developments are sweeping the industry. They are being watched by all forward-looking mill operators.

Get the news first in our monthly "Bulletin." If you don't receive it regularly, send us your name and address for our mailing list.

SACO-LOWELL

MANUFACTURERS OF TEXTILE MACHINERY

147 Milk Street, BOSTON, MASS.

CHARLOTTE, N. C. GREENVILLE, S. C. ATLANTA, GA.

Merchants of New York, who spoke on foundational distribution, and F. B. Ricketson, vice-president, Ponemah Mills, Taftville, Conn., who discussed Mr. Feiker's paper. Ernest N. Hood, treasurer, Naumkeag Steam Cotton Co., spoke on dealing profitably with huge buying combinations, such as chain stores, mail order houses, cooperative buying associations, etc.

At the next session, on Thursday afternoon, the regular business meeting was held, with reports from officers and committees, and election of officers. Following this was conducted a style and sales promotion conference under the direction of Katrine Hooper.

The concluding session was held on Thursday evening, constituting the annual banquet of the Association, with President Lincoln Baylies acting as toastmaster. Hon. Scott Leavitt, Congressman from Montana, and Mr. Baylies, addressed the meeting following the banquet.

What the Southern Mills are Doing

PLANS for establishing an $80,000 cotton underwear plant at Dothan, Ala., are under consideration by the Chamber of Commerce of that city. E. M. Weatherly, secretary, J. L. Vaughn and Ike Rimson comprise the local committee.

The contract for wiring the addition to the Pepperell Mfg. Co., Opelika, Ala., has been awarded. The cost will be close to $30,000. The present plant of the company has 22,464 spindles and a battery of 790 looms for the manufacture of drills, twills, jeans and narrow sheetings, which equipment is being materially increased.

Seidman Braid & Fabrics Corp., it is reported, have acquired the plant of the West Huntsville Cotton Mills, Huntsville, Ala., and are removing machinery for manufacturing braid and other narrow fabrics to that place from their plant in New York City.

E. M. Holt Plaid Mills, Burlington, N. C., are building a three story addition under supervision of the mill officials to manufacture fine rayon cloths. Walter M. Williams, secretary and manager, reports that the broad type of looms will probably be used.

The dyeing department of the Kerr Bleaching & Finishing Works, Inc., Concord, N. C., has increased its capacity 400 per cent. Plant is being doubled.

It is reported that a large spinning group, representing combed yarn interests have organized a company to manufacture mercerized cotton yarns, with plant to be built at Charlotte, N. C., by Lockwood, Greene, Engineers, Inc. It is reported that the plant is to be ready for occupancy within six months.

The new two-story addition to Haynes Mill, at Avondale, N. C., which is a part of the Cliffside Mills organization is rapidly nearing completion. This addition will be used for carding and spinning, and enough machinery is to be installed so that the carding and spinning will equal the weaving.

Moser & Bumbardner, of Hickory, N. C., have been awarded contract for two-story addition to the Allred Mill, Granite Falls, N. C., and will start work at once. The addition is to be completed by the first of the year. It is reported that the work will cost approximately $150,000, and that machinery has already been purchased. There will be 15 houses erected for textile workers, and approximately 25 workers will be employed at the outset, with a probable increase later.

It is reported that the Cannon Mills, Kannapolis, N. C., are going to establish a mercerizing plant at that place, where the largest mills of this chain and headquarters of the company are located.

Ivey Weavers, of West Hickory, N. C., has been incorporated with a capital stock of $600,000 by G. H. Geitner and J. S. Geitner, of Hickory. The company is to spin, weave, dye and finish all kinds of yarn and cloth.

Now They Come in Cotton!

Small cotton bags have such advantages for both the retailer and housewife consumer that potato farmers in Maine are experimenting with this new method of shipping part of their crop. One of the first of these shipments to New York, shown above, was received recently by the Cotton-Textile Institute.

The Edenton (N. C.) Cotton Mills are electrifying their plant at a cost of approximately $20,000.

Rosedale Mfg. Co., Roseboro, N. C., has been incorporated with a capital of $100,000. Troy I. Herring and R. A. Herring are the interested parties.

After having been closed for two years, the Elizabeth Mills, Charlotte, N. C., have been reopened. Equipment is being overhauled and the mills will continue to produce 60s and 80s as formerly. W. C. Wilkinson is president and treasurer; L. H. Wilkinson, vice-president; and C. M. Robinson, secretary.

Announcement was recently made by Dr. W. O. Mitscherling, vice-president and chemical director of the Albert M. Johnson Rayon Mills, Inc., Burlington, N. C., of immediate development of plans calling for the construction of an additional unit to the plant. The addition is to be approximately twice as large as the present plant.

The Adell Mfg. Co., Stony Point, N. C., have recently purchased a set of Breton Minerol Process equipment, furnished by Borne Scrymser Company, New York City, for oil spraying raw cotton. The equipment is manufactured by Herbert Hinckley, Inc., Charlotte, N. C.

The Shelby (N. C.) Cotton Mills are erecting a two-story building to be used for club work, meetings of the textile club and other gatherings of the mill employees.

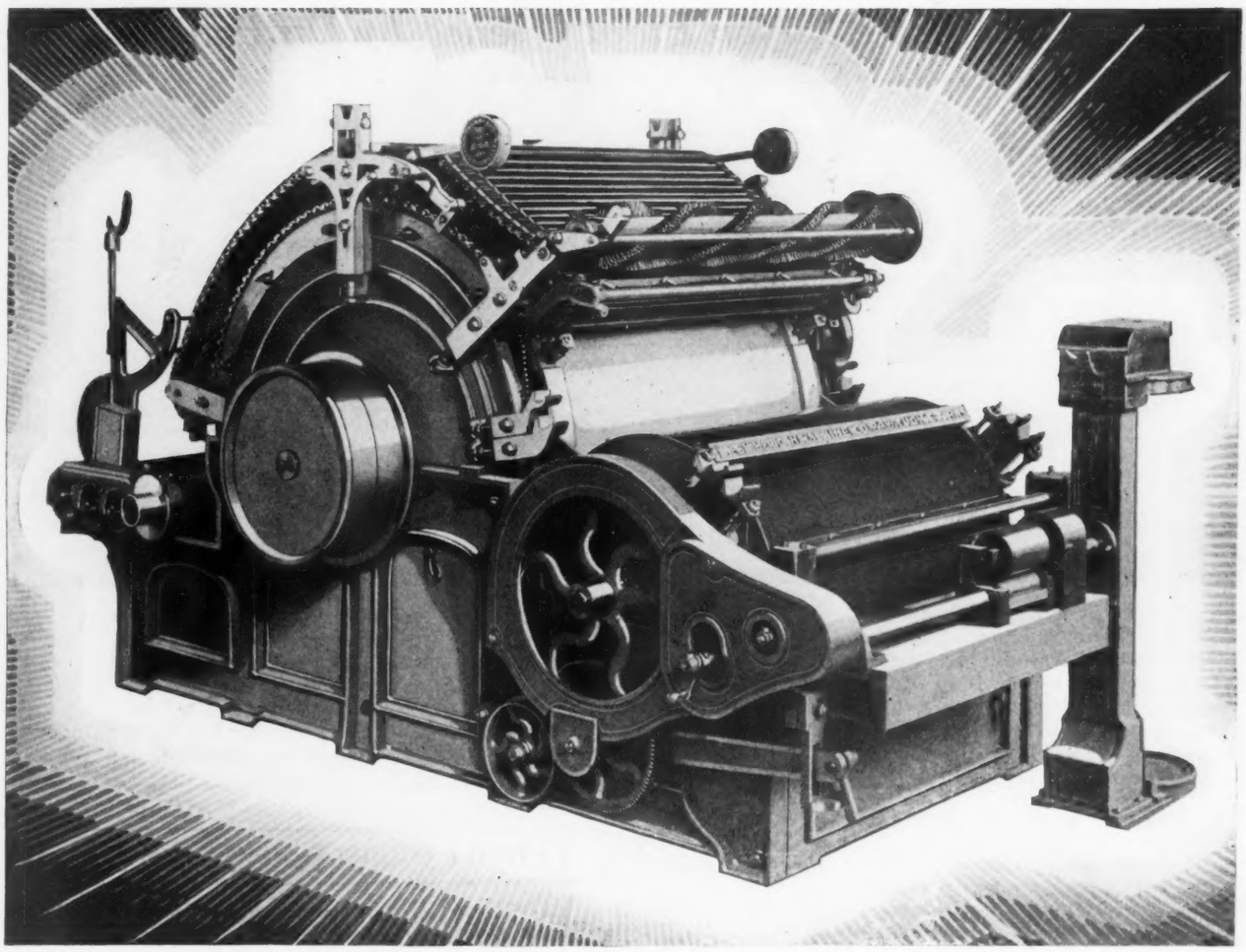
The former County Moore Mills, Hemp, N. C., are soon to be operated under the name of Pinehurst Silk Mills. Thomas T. Lucas, who is resigning from Wellington, Sears & Co., is to be president of the new company, and will be in charge of manufacturing and merchandising. Pinehurst Silk Mills will manufacture rayons and silks, principally rayons. Rayon warp goods, such as the twills, crepes and warp sateens will be given especial attention. Changes are now being made in the equipment of the mill.

Carl Stohn, Inc., Charlotte, N. C., is installing additional winding and quilling equipment.

Highland Cotton Mills, Inc., High Point, N. C., have awarded contract to the Carolina Steel & Iron Co., of Greensboro, N. C., for furnishing 110 tons of structural steel to be used in the addition to the plant.

It was recently unofficially learned that the first of the year may see the beginning of production in the new mills of the Proximity Mfg. Co., Plant No. 2, and Tabardrey Mfg. Co., located at Haw River, N. C. Work of putting the buildings in shape for the installation of machinery that is to take the place of the old, most of which was scrapped, is moving along nicely. It is stated that probably $1,000,000 will be spent in new buildings, renovations and machinery. The Tabardrey Mills will make the cloth and from there it will go to the print mills to be finished.

The Southern Engraving Co., Rock Hill, S. C., is establishing a plant on the property of the Rock Hill Printing &



THE ACE OF CARDS

Points of Superiority

- Rigid Bend, mathematically correct at all stages of wear of the wire.
- Perfect concentricity of Flats to Cylinder. Cylinder Pedestals are adjustable.
- Arrangement for adjusting Flats whereby accuracy to the thousandth part of an inch is obtained.
- Better quality of yarn made from the same cotton, or equally good yarn made from cheaper cotton.
- Patent method of securing Clothing to the Flats, neatest, cleanest and most effective.
- Patent Top Flat Grinding Arrangement for grinding from the working seating of the Flats.
- Patent Flat Stripping Motion which insures perfect stripping without damage to the Clothing on the Flats.
- Back Bends or Circles for supporting Flats and preventing sagging and stretching of chains.

Performance figures, specifications and names of users gladly sent upon request.

H & B AMERICAN MACHINE CO.

PAWTUCKET, R. I.

Southern Office: 814-816 ATLANTA TRUST CO. BLDG., ATLANTA, GA.

BUILDERS OF COTTON PREPARATORY AND SPINNING MACHINERY

New Acele Rayon Plant Opened by Du Pont

The Du Pont Rayon Company announce the starting of Acele rayon production in their new plant at Waynesboro, Virginia. The site of this new plant is at the foothills of the Blue Ridge mountains close by the Jefferson Highway. The buildings are brick and steel construction and comprise four main groups, known as the chemical building, spinning building, a factory building and power house. An inclined conveyor connects the coal unloading track and storage bins.

Acele rayon, it is stated, is manufactured by the cellulose acetate process, and, the manufacturers point out, possesses exceptional resistance to stains, dust, dirt and moisture. When woven or knitted with other fabrics, cross dyeing effects are obtained.

Finishing Co., for the purpose of executing designing work for the local bleachery.

It was recently announced by C. M. Lindsay, secretary of the Fairforest Finishing Co., Spartanburg, S. C., that upon the completion of the plant, the company will bleach, dye or finish approximately 1,500,000 yards of cloth a week.

The Hermitage Cotton Mills, Camden, S. C., formerly manufacturers of print cloths, have installed additional machines for the manufacture of surgical gauze. This plant has 18,688 spindles and 390 looms.

The Chester Plumbing and Heating Co. has been awarded the contract by Kershaw (S. C.) Cotton Mills for the installation of plumbing in 129 houses.

Plans for a new $50,000 theatre for talking pictures are being drawn up under the direction of Lyman Hamrick, superintendent for the Hamrick group of cotton mills, Gaffney, S. C.

The Hartsville (S. C.) Print & Dye Works recently reported contract let to Sam N. Hodges Co., Erlanger Theater Bldg., Atlanta, Ga., for an addition to be made to the mill. The plans, which are being drawn up by the company's engineering department, are for a one-story warehouse, 87 x 120 ft. The addition is to be of mill type construction, conc. footings, tar and gravel room, steel sash and doors.

The Capps Cotton Mills, Toccoa, Ga., a mill of 12,000 spindles, has been purchased by the Toccoa Falls Light & Power Co.

The Exposition Cotton Mills, Atlanta, Ga., recently purchased additional Breton Minerol process equipment.

The Walcott-Spinning Co., Gulfport, Miss., whose plant is being moved to Gulfport from Utica, N. Y., plans to begin partial operations in its new plant by the middle of December, and be in full operation by January 1, according to announcements by officials of the company.

The Spartanburg Mills, Spartanburg, S. C., are to install 25,000 spindles of the Saco-Lowell long draft type in their mill. This mill also is to be equipped with Barber-Colman automatic spoolers and high speed warpers.

The Anderson Cotton Mills, Anderson, S. C., recently installed four Barber-Colman high speed automatic warpers and spoolers, dismantling the old type of spoolers and warpers.

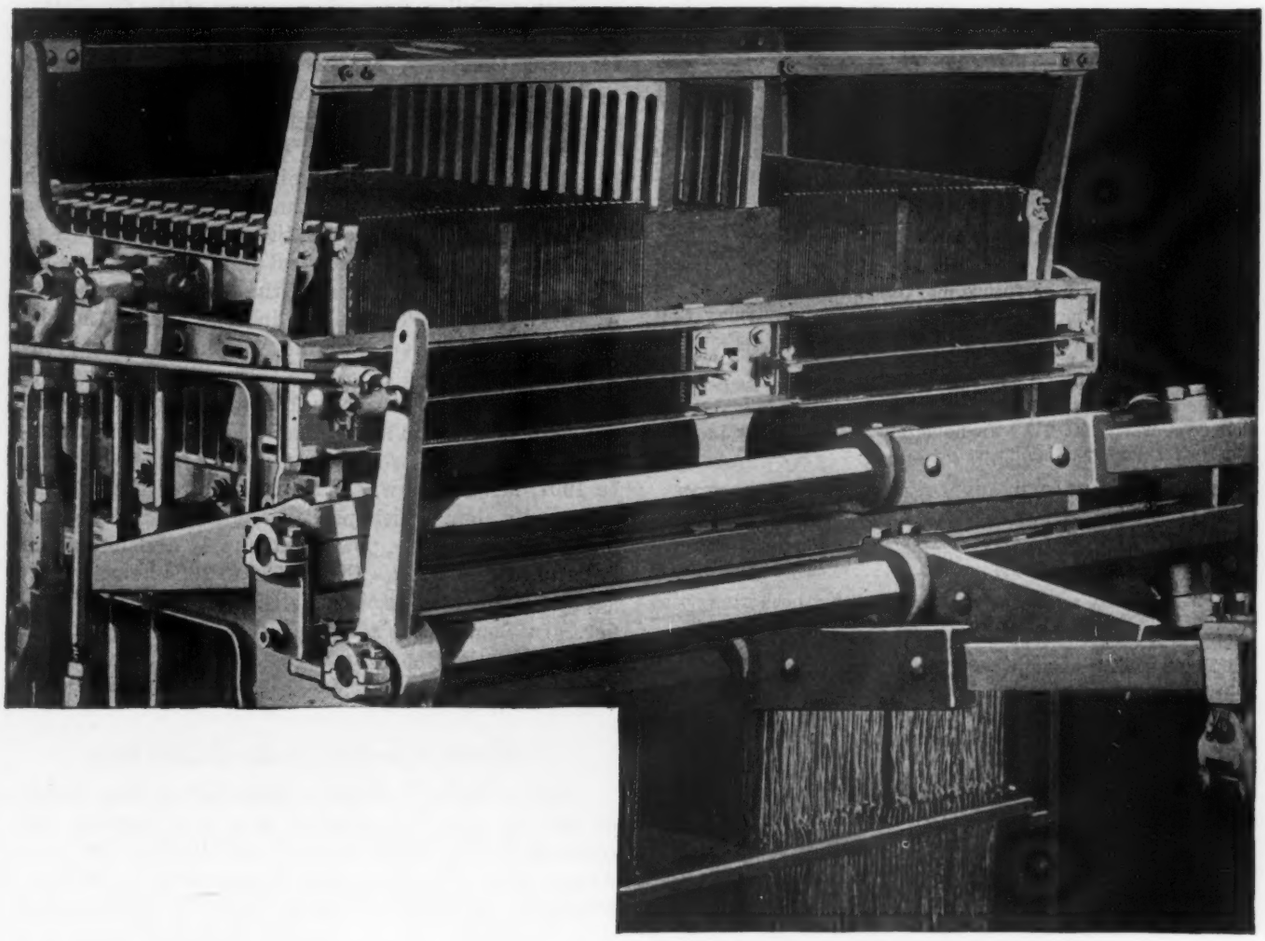
Cotton Comment by H. & B. Beer

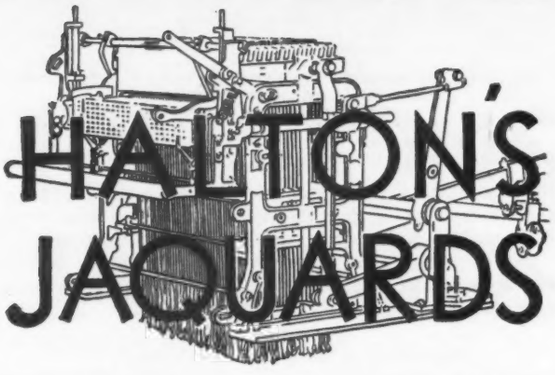
New Orleans, November 19th, 1929.

FREE MARKETING, rather disappointing exports and spinners takings, and official forecast, as per returns as of November 1st, for a somewhat larger cotton crop than indicated as of October 1st, the recent demoralization in Wall Street, followed by a falling off in the spot demand, talk of curtailment by American spinners, an unfavorable domestic October textile report, and bearish British Board of Trade returns for October, caused a further important decline in the cotton market during the period under review, values recently declining to the lowest price levels reached thus far this season.

There was much price fixing at the decline, however, and the low price levels attracted some trade and investment buying. The Federal Reserve Bank, New York, reduced its rediscount rate to 4½ per cent from 5 per cent, there was a further huge decrease in broker loans, which made for a stronger stock market. Federal Farm Board officials made reassuring statements as regards the cotton situation, and President Hoover was quoted as having called a special group of industrial, agricultural and labor leaders to meet next week with high federal officials and plan for revival of construction activity and other means of spurring business. Outlining his plan, the President, it is stated, said the next step would be to organization and co-ordination of a "forward movement of business through the revival of construction activity, the stimulation of exports and of other legitimate business expansion, especially to take such action in concert with the use of our new powers for the assistance of the farmer."

Accordingly the cotton market, during the last few days, recovered nearly all of the recent decline, finals for the period showing only moderately lower compared with the level of values prevailing at the time of our previous monthly review. And because of the recent favorable development and contemplated constructive measures on the part of all interests concerned, there is a much better feeling in Wall Street and the commodity markets, especially in cotton circles.





HALTON'S JACQUARDS

Lever broken?—or a rocker shaft? Sometimes it happens—but don't replace the whole length! Halton's levers and rocker shafts are built in sections—just replace the broken part—and let production continue!

Simplification keeps production on the move Halton's Jacquards are built for continuous operation and they give it. FACTS are shown in our new catalogue. Want it?

THOMAS HALTON'S SONS, "C" AND CLEARFIELD, PHILADELPHIA **H. A. FORBES,** PATERSON, N. J. **FRED H. WHITE,** CHARLOTTE, N. C.

Prior to the action taken by President Hoover, the following press dispatch from Chicago was received with much interest in the agricultural sections of the West and South; "Cotton and wheat farmers were advised not to be disturbed by the fall in price of futures contracts, in an optimistic statement issued here Tuesday night by members of the Federal Farm Board. The board realizes, the statement said, that the demoralized condition of the stock exchanges has caused the drop in the price of cotton. But the board has full faith in the real supply and demand value of cotton and wheat. The board is lending to cotton co-operatives at the rate of 16 cents a pound, basis middling, 7-8-inch staple, at the ten designated spot markets, with proper differentials off and on for grade and staple. In spite of the decline in price on future markets, and regardless of the depth to which stock exchange disturbances may carry that price, the board will continue to lend, as above stated, and will not call for margins on loans. All that any southern farmer has to do to get the benefit of these loans, less proper deductions at his country market, is to join the cotton co-operative at his own home state and deliver his cotton to its seasonal pool."

SEASON'S INDICATED SUPPLY OF AMERICAN COTTON, LINTERS NOT INCLUDED.

Bales —	This Season	Last Season
World's carry-over, Aug. 1st (Hester)	4,395,000	5,252,000
Indicated crop, bales of 500 lbs. gross weight	15,009,000	14,478,000
Indicated season's supply, about	19,404,000	19,730,000
World's consumption of Am., ex. linters	(†)	15,256,000
Average price of middling for season	(†)	18.92

The world's consumption of American cotton, exclusive of linters, during September, was estimated larger than for August of this year and larger than for September of last year, as noted by the following comparatives:

Bales—	This Season	Last Season
September	1,222,000	1,174,000
August	1,136,000	1,186,000
Total, 2 months	2,358,000	2,360,000

CENSUS REPORT

United States — Bales —	This Season	Last Season
Consumption, including linters, October	723,545	695,065
Consumption, including linters, 3 months	1,992,899	1,854,757
Mill stocks, October 31st	1,360,557	1,195,770
Stocks in pub. stg. and warehouses, Oct. 31st	5,311,920	4,632,109
Mill stocks, stocks in pub. stg. and warehouses, Oct. 31st	6,672,477	5,827,879
Active spindles during October	30,134,716	30,302,278

MOVEMENT OF COTTON TO MARKET, EXPORTS, AND WORLD TAKINGS (AMERICAN COTTON.)

Bales—	This Season	Last Season
In sight to Nov. 15th (marketed)	8,943,045	8,053,251
Exports from U. S. to Nov. 15, inc. Canada	2,743,975	2,967,586
World spinners takings to Nov. 15	4,665,000	4,862,000

The Association of Cotton Textile Merchants of New York statistics for October showed sales of domestic cotton goods were 78.5 per cent of production as shipments 93.8 per cent of production. Stocks at the end of October showed an increase of 5 per cent, and unfilled orders showed a decrease of 10 per cent.

Introducing the "Nyatte Undie."

A new type 1930 model of a one-piece knit undergarment for young women and misses is being introduced by the Division of Design of the Byron G. Moon Company, Incorporated, under the name of the "Nyatte Undie," which is constructed of a very sheer, almost transparent, fabric knit of the new low-luster synthetic yarn known as "Nyon," a product of the Nyanza Mills. The garment is described as what is known as a combination, having a low-cut sun-tan back, very narrow shouder straps, and a snugly fitting yoke-shaped waistband that eliminates all bulk or fullness at the waist line. The pantie portions are loose and comfortable, much similar to the running trunk type except for side openings.

While the fabric is of the clinging type, the designers claim that its knitted construction provides the elasticity that permits it to conform to all body movements without binding, and that it also has a degree of absorbency that picks up and evaporates moisture without danger of chilling.

New Atlanta Manager for Westinghouse

Thomas Fuller, formerly manager of the Charlotte, N. C., office of the Westinghouse Electric and Manufacturing Company, has been appointed manager of the Atlanta District Office to fill the vacancy caused by the recent death of H. A. Coles. Mr. Fuller has been prominently identified with many of the big electrical projects of the South and is well known in the electrical industry. He graduated from the Georgia School of Technology in 1905 and in 1905 he entered the Westinghouse apprentice course. Upon completing the course in 1907, he was assigned to the Atlanta office as a salesman and later to the Charlotte, N. C., office where he remained for five years. In 1907, Mr. Fuller was made manager of the Atlanta supply division, which position he held until he was made manager of the power and supply division of the Atlanta office in 1922. From 1922 to 1924 he was manager of the central station division of the Atlanta office. In September, 1924, Mr. Fuller was appointed manager of the Charlotte office, which position he held until his recent appointment.

Goodyear Compass Endless Cord Belt

The Goodyear Compass endless belt, a new design of endless cord transmission belt, was recently announced by the Goodyear Tire and Rubber Co., Inc., Akron, Ohio. The Compass belt, according to the manufacturer, has a special feature in that it has no splice in the core of the cords which carries the load. The cords are imbedded in rubber, and are covered by an elastic, rubberized, fabric envelope. This envelope takes all the surface wear, it is pointed out, and since it is elastic, all of the load is properly thrown on the load carrying cords. The company recommends the belt for belt drives on such equipment as air compressors, vacuum pumps, rock drills, ice machines, feed grinders, wood cleaners, spinning frames, etc. It is also furnished for cone drives in textile plants.

Sulfanthrene Blue 2BD.

E. I. du Pont de Nemours & Co. recently published a very illustrative little pamphlet showing the effects of varying the per cents of the dyestuff Sulfanthrene Blue 2BD on cotton and rayon, as well as giving instructions for the use of this dye.

What should be charged to Lubrication

THE COST of the lubricants of course, is part of the cost of lubrication. And in all too many cases---there the matter ends. But the man who is thinking ahead is beginning to realize more than ever before that there's far more to lubrication than the price he pays for oil and grease.

Maintenance and repair costs due to faulty lubricants or inefficient application, idle machine time chargeable to excessive wear, waste of power and break-down of production schedules are the really important things to consider.

Lubrication is decidedly a matter for engineering and executive attention. Call The Texas Company first. Ask to have a Texaco Lubrication Engineer go over the plant with you. He is a specialist in his field, knows what is demanded; knows the effective lubricant for any given condition and how to apply it. This service is at your call, free of all cost or obligation. Effective lubrication may mean thousands of dollars saved annually.

TEXACO LUBRICANTS

The Texas Company, 17 Battery Place, New York City

Offices in Principal Cities

THERE IS A TEXACO LUBRICANT FOR EVERY PURPOSE

NOTES ABOUT MEN YOU KNOW OR KNOW ABOUT

F. B. Watson, it is reported, will be the new superintendent of the Griffin Mfg. Co., Griffin, Ga., which was recently acquired by the Hightower interests of Thomaston. A. E. Massey, general superintendent of the Hightower properties at Thomaston, will hold a similar position at Griffin. Mr. Watson has been with the Hightower organization for several years, having previously been associated with the Cochran (Ga.) Cotton Mill Company. In going with the Hightowers, he was first superintendent of the Martha Mill, and later was in charge of the Bedaux unit of the Hightower mills.

Henry B. Miller has resigned as superintendent of the Cherry Cotton Mills, Florence, Ala., to become division manager and superintendent of the Consolidated Textile Corporation, Ella Division, Shelby, N. C., to succeed W. J. Erwin, Jr., who has gone to Great Falls, S. C., to become assistant to George M. Wright, president, Republic Cotton Mills, at that place.

C. K. Everett was, according to announcement by George A. Sloan, president of the Cotton Textile Institute, Inc., recently appointed head of the New Uses Section of the Institute. He will be in charge of the Institute's market studies, research and promotional activities dealing with new and extended uses of cotton. Mr. Everett has been a member of the Institute staff during the past three months.

Lee Bowles, formerly of the Fairfax Mills, Fairfax, Ala., of the West Point group of mills, was appointed assistant superintendent of the Avondale Mills, at Sylacauga, Ala., effective October 15th.

J. H. Ripple, for sometime assistant superintendent of Fieldale Mills, Fieldale, Va., was recently promoted to superintendent. He is a graduate of the textile school of North Carolina State College, and while in school was selected as a tackle on one of the All-American football teams.

J. L. Brannan, formerly superintendent of the Barrow County Cotton Mill, Lawrenceville, Ga., is now superintendent of the Bowie Cotton Mill, Bowie, Texas.

E. L. Sord, who has until recently been overseer of spinning and carding at Brazos Valley Cotton Mill, West, Texas, has now accepted a position as overseer of spinning and carding at Bowie Cotton Mill, Bowie, Texas.

Sidney S. Paine, president of the Textile Development Co., Boston, Mass., was recently elected a director of the National Association of Cotton Manufacturers.

T. M. Marchant, president and treasurer; Herbert Lindsay, vice-president and secretary; and A. H. Cottingham, general manager of the Victor-Monaghan Co., Greenville, S. C., addressed approximately 200 members and visitors at the annual banquet of the Victor Improvement Club, Nov. 2. Following the banquet, a very delightful time was had by all of the members and guests at a theater party given by the management of the Victor-Monaghan Co.

Left, R. H. Clore, new general sales manager of U. S. Electrical Tool Co. Right, Sidney S. Paine, president, Textile Development Co., recently made a director of the National Association of Cotton Manufacturers.

C. S. Francis, Jr., formerly connected with the Philadelphia office of the Cotton Products Corporation, is to join the Cannon Mills to head their rayon department, it was recently stated. Cannon Mills is the selling agent for American Enka Corporation.

T. H. McKinney, vice-president and general manager of the Standard-Coosa-Thatcher Company, Chattanooga, Tenn., recently returned from a hunting trip in Mexico.

H. H. Lane has been promoted from second hand to overseer of twisting at the Shawmut Mill Division, West Point Mfg. Co., Shawmut, Ala.

Leslie D. Strother has been made second hand of the twisting department of the Shawmut Mill, Shawmut, Ala.

F. H. McCoy, formerly connected with the Lola Manufacturing Co., Stanley, N. C., has accepted a position with the Perkins Hosiery Mills, Columbus, Ga.

Frank B. Bradley is now vice-president and manager of the Eagle & Phenix Mills, Columbus, Ga. He succeeds H. O. Davidson, who recently resigned.

D. L. Tate is now superintendent of the Burlington Mills, Inc., and Piedmont Weavers, Inc., of Burlington, N. C.

G. D. Byrum was recently made overseer of the spinning department of the Crawford (Ga.) Cotton Mills.

E. Herring, formerly of the Social Circle (Ga.) Mills, is now head of the weaving department of the Barrow County Mills, Winder, Ga.

E. P. Dewberry was recently made overseer of the carding department of the Crawford (Ga.) Cotton Mills.

Julius J. Chamberlain, who has been superintendent of the Carolina Narrow Fabric Mills, Winston Salem, N. C., has accepted a position with the Du Pont Rayon Company and will make his headquarters in Charlotte, N. C. Mr. Chamberlain, who is a graduate of the textile school of the North Carolina State College, before going to Winston Salem, was assistant manager of the Nantucket and Lily Mills, at Spray, N. C.

W. D. Stockton, a graduate of the textile school of North Carolina State College, who has been designer for the Dover Mills, at Shelby, N. C., has been elected superintendent of the Charles Mills, Red Springs, N. C., succeeding Arthur Jarrett, resigned.

George H. Bridge, Jr., who recently made a trip to the Pacific Coast and the southwestern states, is on a trip through the South, representing Wm. R. Noone & Co., Boston, selling agents for The Jos. Noone's Sons Co., Peterboro, N. H.

Ralph H. Clore has been made general sales manager of U. S. Electrical Tool Co., Cincinnati, succeeding George M. Lawrence. Mr. Clore has had actual production experience, and has served as branch sales manager for this company for the past several years. He is thoroughly acquainted with the portable electric tool and machine fields.

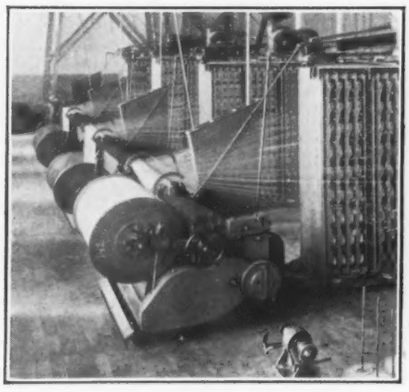
W. R. McElveen, for the past several years superintendent of the Langley Mills, Langley, S. C., has become superintendent of the Southern Manufacturing Co., at Athens, Ga., where D. C. Collier is president. J. O. Blackmon remains with the organization in another capacity, it is understood.

"EVERY KNOT A WEAVER'S KNOT"

MONARCH MILLS

Emslie Nicholson, Treasurer
T. M. McNeill, Superintendent

UNION, SOUTH CAROLINA



SATISFIED USERS *of* BARBER-COLMAN SPOOLERS *and* WARPERS

78,528 spindles—1825 looms—product, wide print cloths. That describes the Monarch Mills at Union, S. C. They are using Barber-Colman machines—4 Automatic Spoolers and 4 High Speed Warpers—and are well satisfied with them. This equipment gives them increased production and improved product because of low tension winding at high speed. Our machines are successful because "*We have Satisfied Users.*" Are you one of them?

BARBER-COLMAN COMPANY

General Offices and Plant
ROCKFORD, ILLINOIS

GREENVILLE, S. C. FRAMINGHAM, MASS.

THE AFRICAN SAFARI

IN Africa, in some of the tropical regions where rivers were not navigable and roads and railways inaccessible, for hundreds of miles into the jungle interior, almost the sole routes of travel were native footpaths wide enough for only a single file of porters on whose heads and shoulders expedition supplies, tents, food, guns, ammunition and other goods were carried. Think of these toiling humans on safari, laden like beasts of burden . . . weighed down with loads growing heavier and heavier with each mile . . . weary, thirsty . . . trekking for days across rugged hills and sun-scorched stones, through wildest jungles and the terrific heat of arid wastes, where water holes are miles apart! Risking the dangers of tropical fevers and the deadly tsetse fly . . . often battling for their lives with vicious rhinos, fierce lions, elephants, leopards, tigers, snakes. Many are victims of the murderous attacks of ferocious wild beasts.

Railroad trains, river steamers and automobiles have now superseded many of the native African routes. Though natives are still used as gun bearers and for some of the lighter packs with camel caravans and automobile safaris, the heavier burden bearing of the primitive safari is almost a thing of the past. Machine methods of transportation have invaded even "darkest Africa."

Machinery has revolutionized communication and transportation, has brought countless comforts and conveniences, has raised the standards of living, and is lightening every phase of labor. It is today the pulse of industry and manufacturing. Textile mill executives know that machine labor means greater profits.

Terrell roving and filling bobbin cleaning machines have for years helped textile mills cut costs. They will pay for themselves in the average installation within the first twelve months. They save on waste, in faster mill production, and in longer life for bobbins. Tremendous savings are made possible on labor, when spinners and weavers work without interruption for bobbin cleaning.

The Termaco is for roving bobbins. The Utsman is for filling bobbins and the type K for both plain and automatic loom bobbins and certain kinds of warp bobbins.

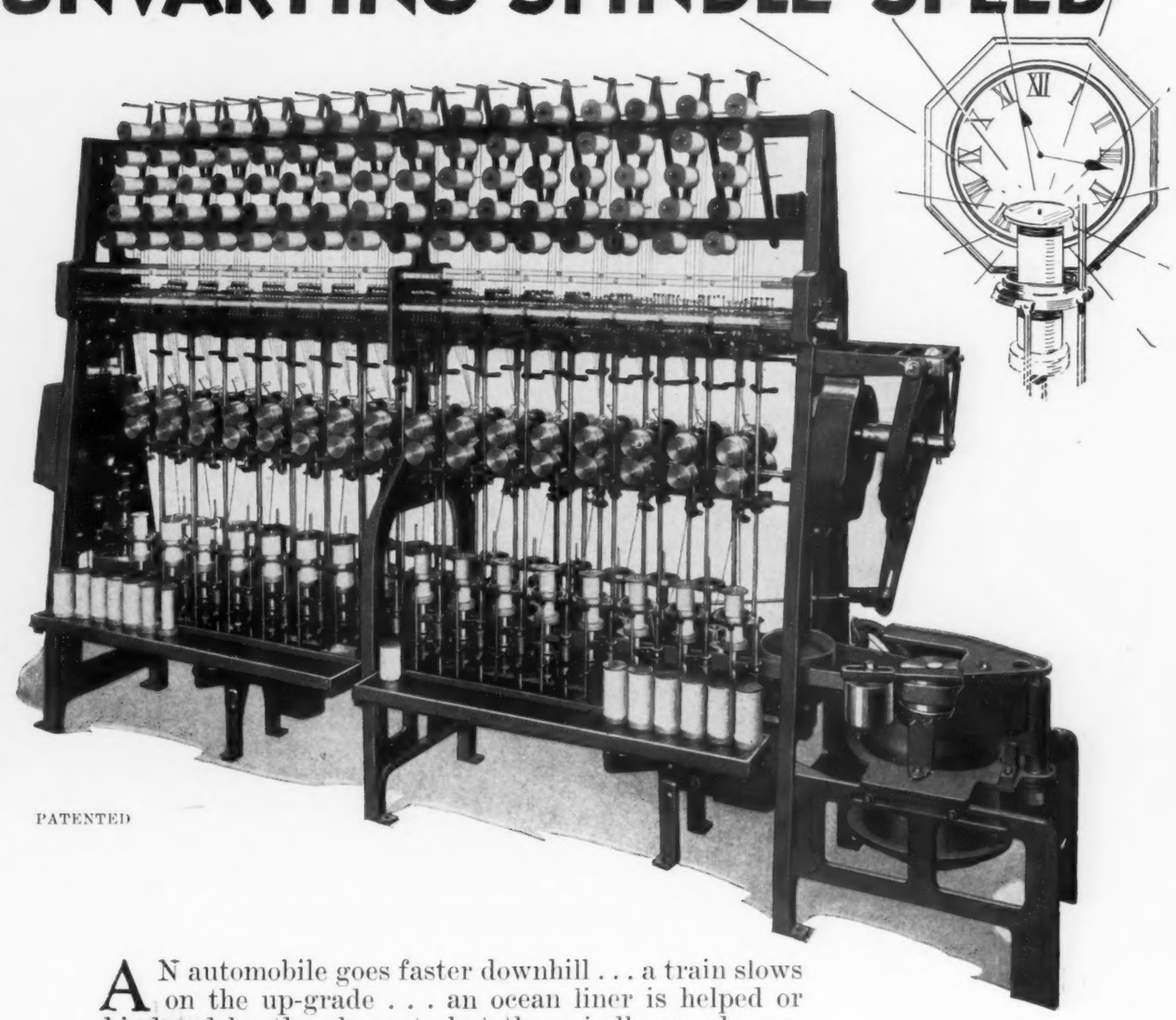
Write for complete information about these machines. In writing, state whether you are interested in cleaning roving or filling bobbins, and if possible, send a sample of the particular bobbin you have in mind. If you are interested also in motor-driven machine, give full details, including voltage, phase and cycle of your current.

THE TERRELL MACHINE COMPANY, INCORPORATED

Charlotte, N. C.

(General Supply Co., Danielson, Conn., representatives for New England, New York, New Jersey, Pennsylvania and Canada.)

UNVARYING SPINDLE SPEED



PATENTED

AN automobile goes faster downhill . . . a train slows on the up-grade . . . an ocean liner is helped or hindered by the elements but the spindle speed on a Fletcher Duplex is as regular as clockwork. No racing nor hesitating . . . no hazards of hard twist. Fletcher engineering once more proves that the 78 years of experience in the building of fine textile machinery reaches its climax in this remarkable doubler-twister.

Spindles are mounted on swing brackets, each locked in its own step. Blades are of high-grade steel, ground and fitted with characteristic Fletcher accuracy. Ample spacing between spindles and idler pulleys between every two spindles further insure a steady drive and a constant, unvarying spindle speed.

Write for Bulletin 34A which describes many other exclusive Fletcher advantages.

FLETCHER DUPLEX DOUBLE-TWISTER for Silk or Rayon.

Made by the makers of the Fletcher Whirlwind Extractor . . . last word in profitable, dependable extraction.

FLETCHER WORKS

formerly SCHAUM and UHLINGER

GLENWOOD AVE. and SECOND ST. PHILADELPHIA, PA.

THE FLETCHER LINE OF THROWING MACHINERY COMPRISES SINGLE AND DOUBLE DECK TWISTERS, DUPLEX DOUBLER-TWISTERS, WINDERS, REELS, DOUBLERS AND BUNDLING PRESSES

THOROUGHLY DEPENDABLE
TEXTILE men have learned that their confidence in U S is justified by the thorough dependability of U S products. They agree that to match their own careful processes for scientific production they must use products that are designed and built along equally scientific lines . . . .
Wherevere Fine Fabrics are Made, U S Products Help Make Them.
Founded in 1857
U S BOBBIN & SHUTTLE COMPANY
PROVIDENCE, R.I. EASTERN DIVISION
MANCHESTER, N.H.~GOFFSTOWN, N.H.
LAWRENCE, MASS.~LOWELL, MASS.
PHILADELPHIA, PA.
MONTICELLO, GA. JORDAN DIVISION
GREENVILLE, S.C.
MONTICELLO, GA. DUBLIN, GA.
JOHNSON CITY, TENN.
US

AN OLD TIMER SAYS
In working with zest and giving hit best,
Just for the pleasure of giving,
In the hope of helping his brother along,
"Old-Timer" finds the sunshine of living

Announcing Winners in Weaving Contest

ON PAGE 151 of this issue of COTTON you will find the three letters to which the prizes have been awarded in the contest on weaving questions, which began on my page of the August number. As announced in that place, the winners are:

First prize, **H. Raiford Gaffney,** Muscogee Manufacturing Company, Columbus, Ga.

Second prize, **B. C. Baker,** Superintendent, Kershaw Cotton Mills, Kershaw, S. C.

Third prize, **W. M. Jones,** Lancaster Cotton Mills, Lancaster, S. C.

In passing, let me extend my congratulations to these men upon being the winners, and upon the general excellence of their answers. And to the following also, whose replies were so close to the winners that we realize that they deserve honorable mention:

Harry Garden, Greenville, S. C.
C. K. Cobb, Assistant Superintendent, Canton Cotton Mills, Canton, Ga.
A. Ballew, South Greenwood, S. C.
H. Parkinson, Greenville, N. H.
Robert Newell, Holyoke, Mass.

Now, fellows, there are many things I wish to say in connection with this contest and the various answers that were received to the questions.

First, I wish to express satisfaction at the very large number of replies that came in. Naturally, before even suggesting the questions to the editor, it was necessary for me to apply a great deal of thought to each one of them, and in doing so, I realized how hard it was to make a satisfactory explanation of the different points. Frankly, therefore, I had some misgivings, so to speak, as to whether they would be a little too hard for a great many of my readers to tackle (since you, like myself, are not professional writers), and so I was extremely pleased when I found out how many answers had come in, and when the editor told me that, while most of them came from the South, there were some answers from as far away as Maine and Texas.

Some of the comments which came along with the answers interested me very much. One man said, "Dear OLD TIMER: I am sending what I thought would be 15 minutes' effort, and what turned out to be five hours of hard labor." Another man said, "I hope you get as big a headache reading the answers as I did in writing mine."

WE WISH to emphasize one point in connection with the Weaving Contest, brought out on his page in this issue by Old-Timer. That is, that each answer of the prize-winners does not necessarily represent the best answer to that question. For example, as he points out, several of the letters which did not win a prize answered Question No. 3 better, in the opinion of the judges, than did Mr. Gaffney. Also, the answer made by the winner of the third prize, Mr. Jones, to question No. 2, was not considered nearly so correct as many of the others.

However, the awards were made considering the answers as a whole, alloting an equal number of points to each answer, and considering in addition such features as manner of expression, clearness, detail, and general excellence. Under the circumstances, this was deemed by the judges the fairest and best method of determination. — Editor Cotton.

Now, before saying anything about the letters that were finally selected, let me drive this point home to the large number of others who submitted answers. Won't you agree that, prize or no prize, and hard labor to the contrary notwithstanding, *you have been fully benefited for the effort you expended on these questions?* Please let that thought stick. Do not read further until you have gone over it again.

In our own mill, a few days after the questions were published, in going through the weave room I noticed a number of our own men watching looms like an old setter dog. I guess they were trying to find out something about the eccentricity of the lay, or where the shuttle spent most of its time.

The Editor has had more opportunity to get around than I have, and he tells me of numbers of instances of a similar nature that were seen by or related to him, showing very conclusively that the questions had really aroused a great deal of interest because they were somewhat different from the usual contest.

From the very beginning, and in keeping with one of the main purposes of my department, the original idea in suggesting these questions was to make you fellows think, because if we can make you think about your jobs, you are going to be better mill men as a result of it, and in a very large measure, I am confident

that we have achieved this with this contest.

Even if we didn't go one step further, it would be worth while, but as we will explain, we expect to analyze and explain the answers so that the large number of readers who did not enter the contest will be as fully informed as if they had given the questions concentrated study.

Now a word about the letters themselves. There is one point which I wish to drive home, in fairness to myself and the other judges, as well as to the writers of the other papers which have not received a prize in this contest.

With six entirely different questions in the contest, and with some of them open to different answers, the other two judges and I are agreed that being a judge in a proposition of this kind is no cinch. For instance, with no definitely established "cut and dried" answer as a gauge, it was pretty hard for us to choose between two answers in some cases, to the same questions, because both men were right, though each had brought out a different point.

Furthermore, it is a fact that in many cases, a man would answer some of the questions almost perfectly, and then fall absolutely flat on some of the others. How this could be I don't know, but it is a fact.

To illustrate: Although Mr. Gaffney's letter was awarded first prize, his answer to the third question was absolutely wrong, because in my judgment he missed the point of the whole question.

Mr. Jones was awarded the decision of the judges in the third prize, but his answer to the first question was obviously "all wet."

I give you these illustrations, not necessarily in direct criticism, but to explain to you why it will be, when you read the answers, that even the prize winners fell down in some respects. If any three men in the whole contest, or any one man, had answered all six questions perfectly, our job as judges would have been a snap, but as indicated, there was not a single man who answered all six questions better than these questions were answered, separately, by others.

That means that each one of Mr. Gaffney's answers, for example, is not necessarily the best answer to any particular question—far from it!—and the same is true of the others. Our method of grading was on points per question, taking the total number of points, and also taking into consideration the paper as a whole, the completeness of description, the clearness or wording which would best be understood by the lay reader or those who had not made a specialty of weaving (such as a superintendent or manager who was once overseer of carding or spinning), etc., etc.

Taking any one of the questions, there were many included in the bunch which, although receiving no prize, answered it as well, and in some cases better, than did the prize winner in that particular case, but we had to judge the letters as a whole. I trust this will explain what may seem to be discrepancies on the part of the judges in their selections.

In order that we may not lose the many valuable points brought out with regard to certain of the individual questions by many of the other readers replying, I have made arrangements with the Editor for the next few months at least, to go through all of the other replies and pick out the answers in each case which seem to throw additional and helpful light on the subject, and publish these.

He has promised, for the January number, to go through all of the answers to Question No. 1 and Question No. 2 and present such a digest. This does not mean that we will publish all of the answers to these questions, but the idea is to take all of the answers and put all of those that seem to give about the same explanation in one group, selecting one or two which will properly represent these answers, and then in addition quote other replies which may throw a different light on the matter or give a different kind of reply. This will enable each and every contestant, as well as other readers, to think some more.

Then, in succeeding issues, we will take up the remainder of the questions. In this way we believe we will get the full benefit of the different ideas that were brought out in the various answers.

Although the number of contestants was large, we realize that this contest has benefited hundreds of readers who did not enter the contest, but who are watching COTTON for practical information. When we have finished with this contest, as explained, we believe we will have been of real service to the textile industry, and that of course is our paramount object.

Before closing for this month, let me say this one thing more. As indicated, I was surprised at the large number of replies which came in, and in addition have been amazed at the intelligent answers which these contained. I believe that if we could check up on all of those replying, it would show that a majority have had technical training, and by that I do not mean necessarily in textile schools. I do know positively that if these same questions had been put before the textile public 15 years ago, about the only answers we would have had to the first two questions, especially, would have come from textile school professors or machinery builders.

And this is the particular phase of the contest which has pleased OLD TIMER the most. It bears out the thought expressed in his article in the October Southern Textile Progress Number that we as a body of overseers and superintendents are progressing and we are not going to be content until we are known throughout the textile world as the most efficient men in the business. *Boys, are you with me?*

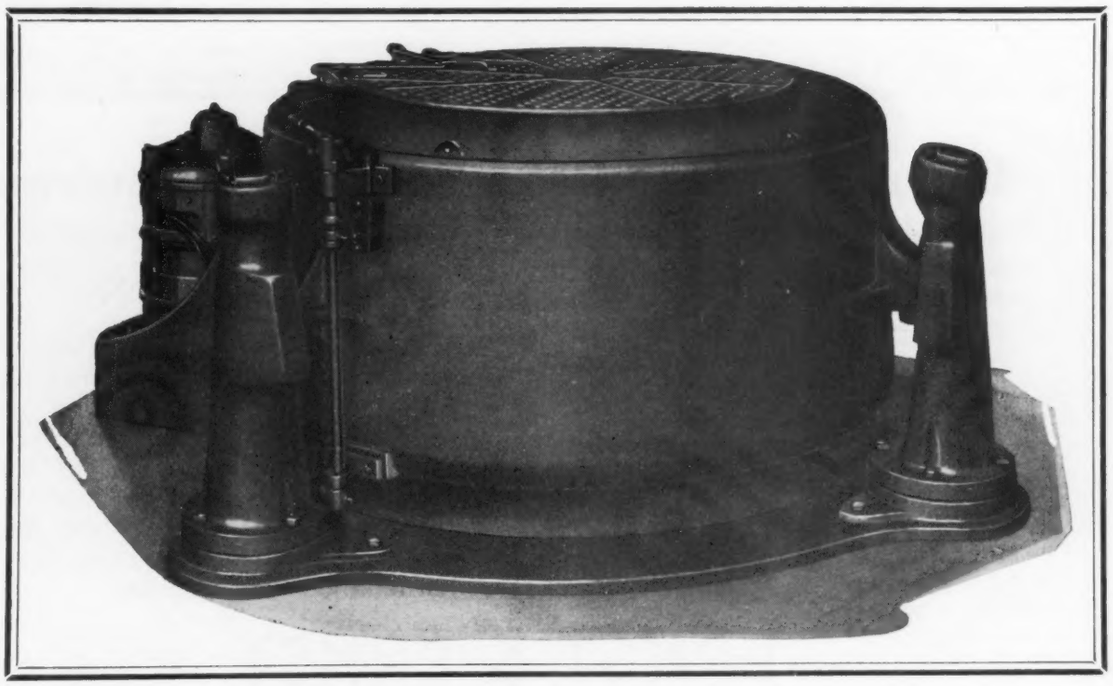
You remember that a few years ago I published a letter explaining how any overseer or superintendent could get the necessary technical training, without going to textile school. Two hours a night is equivalent to a day in school if you've the "grit" to keep it up.

Now, you who did not join this contest, listen: Haven't we proven to you that we *are* progressing and that *you* should join the ranks? Age is no handicap or excuse. Are you man enough to pledge yourself to start a system of study just one hour for two nights per week? If so, send your name to the Editor of COTTON and OLD TIMER will help you get started.

Again thanking the large number of our readers who took part in this contest and congratulating each and every one, I am

Sincerely your friend,

OLD TIMER.



THE IDEAL TEXTILE EXTRACTOR—NOT BECAUSE OF ITS FEATURES BUT BECAUSE IT IS A TRUE TOLHURST

The Side Motor Driven Tolhurst Center Slung Extractor combines new design and advanced features with practical engineering knowledge gained through specialization in building of centrifugal equipment for over fifty years. Increased yield and lower operating costs are but two of its many interesting attributes. It is a more convenient unit. It is a sturdier and thoroughly dependable machine and it is safe to the point of being fool-proof.

DESIGNED AND BUILT BY SPECIALISTS

To mention but three of its exclusive features and their bearing upon economy and dependability—these are the Center Slung construction, the arrangement of drive and the design of bearings.

The patented Center Slung construction, which arranges for support at points on a plane through the center of gravity of the basket, overcomes the tendency to dance or vibrate with unbalanced loads.

The V-belt drive, combined with the Tolhurst Clutch, maintains a lower power curve with no peak load upon the line, and there is no strain upon drive, motor or machine.

The bearings are maintained in positive alignment in a single dustproof, grease-packed housing.

For Catalog illustrating and fully describing this important unit, write the nearest Tolhurst office today.

Southern Representative:
Fred H. White,
Independence Bldg.,
Charlotte, N. C.

San Francisco Representative:
B. M. Pilhashy,
Merchants Exchange Bldg.,
San Francisco, Calif.

Canadian Representative:
W. J. Westaway Co.,
Westaway Bldg., Hamilton, Ont.
455 Craig West, Montreal, P. Q.

TOLHURST
REG. U. S. PAT. OFFICE
EXTRACTORS

TOLHURST MACHINE WORKS ESTABLISHED 1852. TROY, N. Y.

New York Office: 30 Church Street
Chicago Office: 8 So. Dearborn St.

TOLHURST MACHINE WORKS
Please send me catalog describing the side motor driven Tolhurst Center Slung Extractor and illustrating its advantages.
Name .....
Address .....

Executives Who Have Found Themselves

The great promise, and the safest assurance, of increasing success in any business lies in *sound organization*—which is simply that balance of control which harmonizes the work of executives who have found themselves.

In knowing the principal and necessary functions of their business, and each with that specific knowledge and personal aptitude which makes him supremely fit, such men find, in their organized work together, not only themselves but an ever-growing success.

Through its wise and experienced counsel, and in the application of its tried practices in the building of *sound organizations*, Modern Accountancy contributes one of its most valuable services to modern business. *Organization* is both the cause and the result of executives who have found themselves.

ERNST & ERNST

ACCOUNTANTS AND AUDITORS—SYSTEM SERVICE

NEW YORK	RICHMOND	DETROIT	CLEVELAND	CINCINNATI	CHICAGO	INDIANAPOLIS	ST. LOUIS
PHILADELPHIA	WINSTON-SALEM	GRAND RAPIDS	AKRON	DAYTON	MILWAUKEE	DENVER	KANSAS CITY
BOSTON	BUFFALO	KALAMAZOO	CANTON	LOUISVILLE	MINNEAPOLIS	DALLAS	OMAHA
PORTLAND	ROCHESTER	ATLANTA	COLUMBUS	HUNTINGTON	ST. PAUL	FORT WORTH	MEMPHIS
PROVIDENCE	PITTSBURGH	MIAMI	YOUNGSTOWN	NEW ORLEANS	DAVENPORT	HOUSTON	SAN FRANCISCO
BALTIMORE	WHEELING	TAMPA	TOLEDO	JACKSON	FORT WAYNE	SAN ANTONIO	LOS ANGELES
WASHINGTON	ERIE	BIRMINGHAM				WACO	SEATTLE

COMPETITION--

Every cotton manufacturer knows that security in paying manufacturing lies in:

Dependable cotton staple.
Known machinery capacity and costs.
Market prices safely above manufacturing costs.

It is the accepted obligation of invested capital to bring under control every part of this three-fold unit.

MILLING TESTS ARE AVAILABLE WHICH PROVE THAT ONLY WHEN PRESENT-RUN COTTON IS GIVEN THE MURRAY-HANCOCK PROCESS HAVE WE SET UP THE MOST ADVANTAGEOUS CONDITION OF THE FIBRE FOR MILLING, AND THE EXACT BASIS FOR ADJUSTING THE MILL MACHINERY.

(Certified copies of proof-tests, on request.)

COTTON GINNING AND COTTON SEED OIL MILL MACHINERY

DALLAS, TEXAS MEMPHIS, TENN. ATLANTA, GEORGIA

HOW OTHER MEN MANAGE

Practical Discussions by Cotton's Readers On all varieties of Mill Subjects

Winners in "Old-Timer" Weaving Contest

A LARGE portion of the "How Other Men Manage" department this month, beginning on this page, is devoted to the publication of the winning answers to the questions on weaving which appeared on Old-Timer's page in the August issue. The regular letters this month have been selected as pertaining mainly to other subjects in order to give the department a balance. See Old-Timer's comments on page 147 of this issue for a detailed explanation in connection with the award of the prizes.

First Prize Letter.

By H. Raiford Gaffney,
Columbus, Ga.

Question No. 1. Why is the crank-shaft placed below the level of the bearing on the lay sword?

The reason for placing the crank-shaft box below the level of the bearing on the lay sword is to give an eccentric movement to the lay. The idea of giving eccentricity to the motion of the lay is two-fold. First, it allows the shuttle time enough to get across from one box to the other while the shed is open; and, second, it gives a firmer beat-up to each pick of filling. Stated in other and less technical terms, this position of the crank-shaft box requires the lay to consume a greater length of time in moving from the fell of the cloth to its extreme back position than it does in moving from its back position to the fell of the cloth. Of course, the crank-shaft is turning at the same number of revolutions all the time, but the lay moves backward comparatively slowly and moves forward quickly and with a good snap. It is this quick forward movement which gives a good, firm beat-up to each pick of filling. Then when the crank is passing around back center, the lay is moving so slowly that it is almost still. This is a good thing, because the lay is moving fast with the crank on top center when the shuttle begins to move, and as the speed of the shuttle slows down during its passage, the speed of the lay also decreases and overcomes any tendency of the shuttle to miss the box. This point will be more fully covered under the next question. If you will look at the accompanying

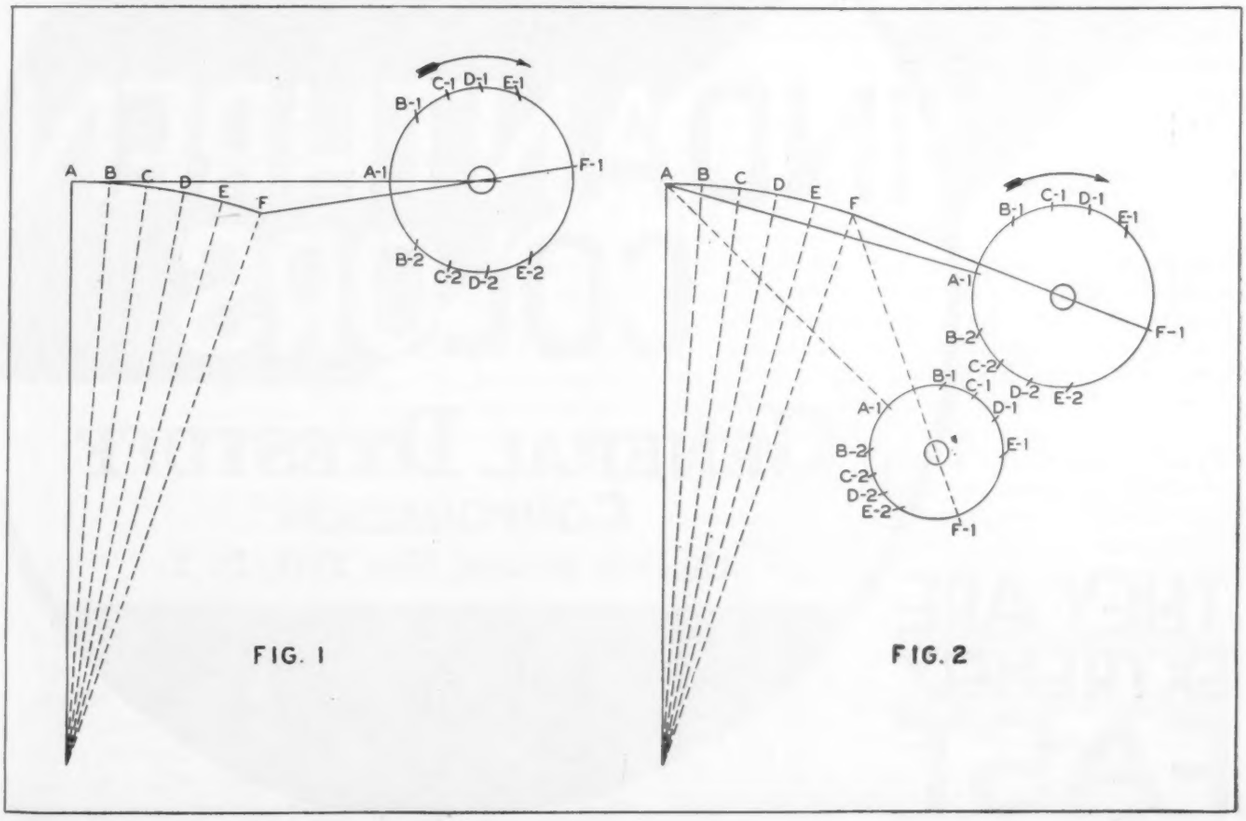


FIG. 1

FIG. 2

GDC

INDANTHREN COLORS

GENERAL DYESTUFF CORPORATION
230 Fifth Avenue, New York, N. Y.

THEY ARE EXTREMELY FAST

drawings, Fig. 1 and Fig. 2, you will be able to see this more clearly. These two drawings are meant to represent the relative position of the connecting pin on the lay-sword and the position of the crank during one full revolution of the crank-shaft, which of course represents one pick.

Fig. 1 shows a loom with the crank-shaft box set *level* with the connecting pin on the lay sword. Fig. 2 shows two different settings of crank-shaft box below the level of the connecting pin on the lay-sword. No effort has been made to draw these diagrams to scale. The whole idea is to show the position of the crank when the connecting pin on the lay-sword is in any given position. For this purpose we have assumed the position of the lay at the fell of the cloth, the position of the lay at its extreme backward point, and four intermediate points. It should be understood that the selection of the intermediate points is purely arbitrary—there might have been one point or there might have been fifteen points.

H. R. Gaffney.

When the connecting pin is at *A*, the crank is at *A-1* on the back stroke or at *A-2* on the forward stroke. When the connecting pin is at *C*, the crank is at *C-1* on the back stroke or at *C-2* on the forward stroke, and so on. Now if you will consider Fig. 1, you will see that when the lay is at *F*, the crank is at *F-1*, which is a little *less* than one-half of the circumference of the large circle. The circle is to be measured clockwise from the point *A-1*, where the lay is at the fell of the cloth. This means, of course, that the lay has reached its extreme backward position *before* the crank has made one-half of its revolution. What is the significance of this? It means that the lay is moving faster on the *backward* stroke than it is on the *forward* stroke, *which is exactly what we do not want!* Now a reference to the upper circle in Fig. 2 will show that when the lay is in its extreme backward position the crank has completed a little *more* than one-half of its revolution. This means that the lay moves backward comparatively slowly and beats up comparatively quickly, giving the shuttle more time to cross on the backward stroke and making the lay beat up *more* smartly. The lower circle in Fig. 2 is given to prove that the *lower* the crank-shaft box the *greater* the eccentricity of the lay, since in this case the crank has completed *much* more than one-half of its revolution before the lay is in its extreme backward position. In all three cases *A-1* shows the crank in the forward position, (the lay at the fell of the cloth) and *F-1* shows the position of the crank in the extreme backward position. *B, C, D,* and *E* with their numbers *1* or *2* have the same relative positions in all instances. It is interesting to note that the lower the crank-shaft box is placed, the smaller is the circle which the crank describes. The three circles shown in the two figures (representing the trip taken by the crank in each setting) all move the lay through the same distance. If any of you hard-headed boss weavers doubt this, let him measure the distance from *A* to *A-1*, from *B* to *B-1* or *B-2*, or from *F* to *F-1* in all cases. If you don't find all these distances exactly the same, then I have grounds for a suit against my good friend, the Editor of COTTON. Of course we all know that a crank-shaft box is never placed as low as in the lower circle in Fig. 2. This is given simply to show how the eccentricity of the lay can be increased at will.

To summarize, if the crank-shaft box is on a line drawn through the front and the back position of the connecting pin, there will be no eccentricity. If the box is above this line, the greater speed of the lay will be on its back stroke. If the box is below this line, the lay moves faster on the beat-up. The last setting is the correct one.

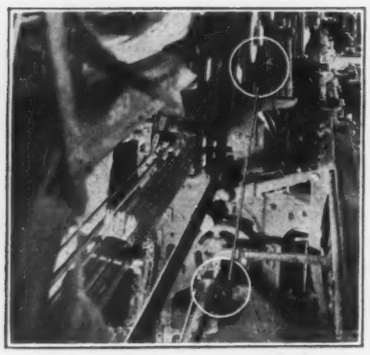
Note: The lines *A* to *A-1* and *F* to *F-1* were drawn in to show the crank arm in these extreme positions. The *B, C, D* and *E* lines were not drawn in because it was thought that this would make the sketch confusing on account of the multiplicity of lines. The reader can readily put in these lines with pencil if he thinks it will help.

Question No. 2. What prevents the shuttle flying out of the loom when it is being run with only a reed, that is, no warp in it?

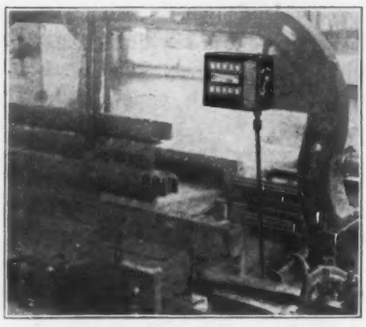
Anyone who has ever lived in the country and ridden to school in a two-horse wagon can guess this one. For of course he has sat up against one side of the wagon bed and rolled apples to his own or (as in my case) somebody else's girl. He will remember that even if the horses (it's the same thing with a mule team) be going at a pretty brisk trot the apples would roll in a perfectly straight line *so long as the pace remained steady.* But if the team was just poking and your big brother cracked his black-snake whip along side of the ear of that nervous little mare on the off side, what then? Well, the old apple continued rolling *across* the wagon, but instead of rolling straight across, it took a curve for tail-gate. Then when brother got down to the creek and reined in (provided you were not tired of rolling apples by that time) you would see the apple roll up forward and very likely stop under the seat with the croker sack full of corn husks on it.

Well, let's eat the apples and get to work on the loom. I believe that everybody, except red-headed loom-fixers, set the pick cam so that the shuttle will start to move when the crank-shaft is on or mighty near top center. Now if you will be good enough to look at Fig. 2 again you will see that the lay is swinging backward fastest when the crank is between *B-1* and *D-1*. This is top center, the position of the crank when the shuttle begins its trip across the race plate. (This is the time when you turned the apple loose while the team was running fast.) You will see that the speed of the lay begins decreasing from *D-1* to *E-1*, and that from *E-1* to *F-1* it is moving very slowly. (This is like reining in your team quickly and having the apple roll toward the front of the wagon-bed). The shuttle is pressed lightly against the front of the reed on account of the reed's moving backward more slowly than when the pick started the shuttle on its way.

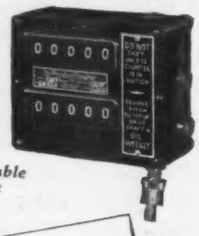
To get away from our wagon and become a little more modern, it's about like having the front bumper of your car up against the rear bumper of your boss

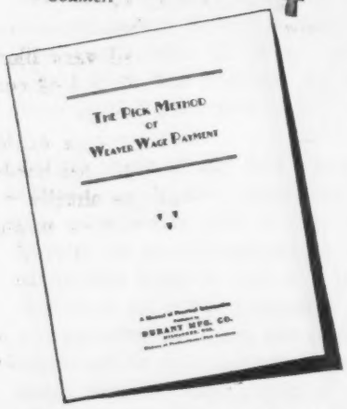


Productimeter Pick Counter applied to Stafford Loom in a large cotton mill.



Productimeter Double Deck Loom Pick Counter on a well known loom, showing cam shaft drive with connecting rod as desired for efficient operation.



Productimeter Double Deck Loom Pick Counter.

This Book describes completely the Pick Method of Weaver Wage Payment. It contains complete tables and forms for applying the Pick Method to your mill. Write for a copy.

What is All This Talk About Pick Counters and Pick Payments?

This Man is About to Find Out

Many mills are adopting the Pick method of weaver wage payment, because of its important advantages in accuracy and improved production control. Mill executives charged with the responsibilities of pace and quality of production, control of weavers and looms, find the Pick Method a great incentive to weavers and a quick and certain means of checking lagging looms.

If you are responsible for efficient production in your mill, it will pay you to investigate the Pick Method of Weaver Wage Payment as against the cut mark or yardage method. Write today for our book explaining the Pick Method and Productimeter Pick Counters.

DURANT MFG. COMPANY
668 Buffum Street Milwaukee, Wis.

Southern Representative: GEO. P. DAVIS
Builders Bldg., Charlotte, N. C.
New England: DURANT MFG. CO., *Leo. A. Nourie, Mgr.*
36 Garnet St., Providence, R. I.

Productimeters

THE SPEEDOMETERS OF INDUSTRY

slasher's car. If you both are running at 20 miles per hour, you will just barely touch him. But if he slows down his engine to run 15 m.p.h. while you are slowing down yours to run 18 m.p.h. then you are exerting a steady, gentle pressure against his car. In like manner, the shuttle slows down but the reed slows down faster. In looking at Fig. 1 and Fig. 2, you must remember that the closer together the graduations on the circle are the faster is the movement of the reed during that interval. In other words, when the lay moves from *C* to *D* it moves exactly as far as it does from *E* to *F*. But the distance on the circle from *C-1* to *D-1* is more than twice the distance from *E-1* to *F-1*. This means that the crank must turn more than twice as far to move the lay the same distance. Since the crank is turning at the same speed all the time, the lay must move over twice as fast from *C* to *D* as

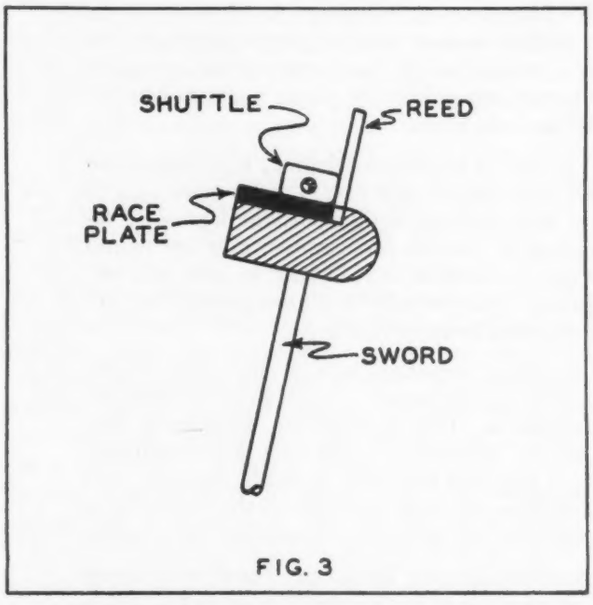


FIG. 3

it does from *E* to *F*. There is one other condition that works toward keeping the shuttle from flying out, that is when the shuttle has left the box the race plate is not level, but the back of it (where the reed is) is lower. Hence the force of gravity exerts a down-hill pull on the shuttle and also tends to press it up against the reed. This is seen readily in Fig. 3.

Question No. 3. Why do you set the harness cams to pick from the right-hand end with the back harness up—or do you?

OLD TIMER must be giving the boys a ride on this one. I hardly know where to start in, because there's nothing to it. How could you possibly set your cams to pick from the right hand end if you were making a three harness twill? Your little old loom will pick from the right-hand end *half* of the time when the back harness is up, yes sir, but just as sure as a gun's iron she's going to pick the other half of the time from the *left-hand* end when the back harness is toward the roof. And how about a five-harness sateen? And any fancy dobby? Or Jacquards? No, Old Friend, you're just having a little fun with the boys. Or were you just talking about two-harness work? Well, even in this case whatever advantage you *might* have in picking from the right-hand end of a right-hand loom, you would lose in the case of a left-hand loom. I believe this is what OLD TIMER wants us to remember: Be sure that the back harness is strapped to the treadle which is operated by the larger shedding cam, and that this cam is sufficiently larger than the other cam to insure the shed being the same size on every pick. In the case of twills and sateens, the front harness is operated by the largest cam, the second harness by the next largest cam, and so on. In order to make the shed the same size with all the harnesses, the harness toward the back must move through successively greater distances, and this means successively larger shedding cams. By the same token, the back harness must be fastened to the larger collar on the harness roll. Since this is one of the fundamental physical principles of weaving, no drawing is necessary for this answer. OLD TIMER, I hope you haven't tricked me!

Question No. 4. What part or motion of the loom prevents its being operated at a higher speed?

Undoubtedly the picking motion. You can speed up the old brown lay until it looks and sounds like flushing a covey of partridges. And you can pull your harneses up and down so fast that they will look like birch leaves fluttering in the breeze. But don't try to make her *pick* too fast! There are many reasons for this: the shuttle must begin to move gradually or you'll break picker sticks and many other things. The binder is holding the shuttle tightly and it must gradually be pushed out until just as the picker stick reaches the end of the stroke it is traveling at its greatest speed. So we have to have enough power to overcome the pressure of the binder in the box which the shuttle is leaving, snap the shuttle clean across the race plate at high speed, and have the shuttle left with enough power to force itself home in the opposite box in spite of the pressure of the binder there. The pressure of the binders must be great, because the shuttle must be completely checked to prevent it from rebounding in the box. And the shuttle must reach the box at a terrific speed or we will be picking too slow. Now this picking and checking is what makes so much noise and (what is more important) so much vibration in a weave room. It causes more wear on the loom than anything else, and it requires more power than all the other motions combined.

If you doubt this, take the brake off and try to run a loom by moving the lay back and forth with your hands on the reed cap. This means with the power off, of course. If you are a good man, you can do it with a light loom.

But take your shuttle out and set your protector motion so that your loom will not bang off and you can run it easily with one hand. Builders have shown looms running several hundred picks per minute, but they don't recommend them. And even then they have them fastened to rubber bases because they will tell you that at such speed the looms would either tear themselves from the floor or break themselves to pieces. Of course, opening and closing the shed too fast does not help, neither does too swift a beat-up, but it's the old pick and check that keeps down our speed after all. The hitch is that the shuttle must

A 200% ANNUAL DIVIDEND

A GEORGIA MILL producing about 50,000 pounds of yarn a week spinning 7's, 8's, 9's and 10's, installed a modern humidifying equipment. As they averaged a 15% loss from cotton opened to yarn spun, approximately 58,800 pounds of cotton were put into work.

A 45 pound lap was made, i.e., 1,308 laps were made per week, or in a year, 1,308 x 50 or 65,400. With their modern equipment, the laps were reduced to 44 pounds each, a saving of one pound per lap, or a total saving of 65,400 pounds per year. Figuring cotton at only 18 cents a pound, the saving amounts to $11,772.00.

One man, devoting half of his time to the humidifying equipment, equals $450.00 spent for maintenance. The humidifying equipment cost $5,000.00. Allowing 10% for repairs and depreciation (a generous amount), would be $500.00. This results in a new profit per year on the humidifying equipment of $11,772.00−$950.00=$10,822.00.

And besides the foregoing, there were many other savings and improvements due to the installation of humidifying equipment, including reduction in invisible waste, increased breaking strength of yarn, more healthful working conditions for employees, etc. all resulting in increased production.

If you have troubles in the roving, the spinning, the weaving, or any other process in your mill let an Amco air doctor locate them. Or, write us to tell you of other cases where AMCO humidifying equipment saves time and money and betters working conditions.

This newly designed Amco Humidity Control automatically regulates and controls humidity in Textile and other mills without using wet or dry bulb actuated devices.

AMERICAN MOISTENING CO.

Humidifying Devices

Air Doctors Since 1888

EXECUTIVE OFFICES
312 West Exchange Street,
Providence, R. I.

CANADIAN AGENTS
Ross Whitehead & Co., Ltd.
1111 Beaver Hall Hill
Montreal, P. Q., Canada

SALES OFFICES
Boston, Mass. Atlanta, Ga.
Charlotte, N. C. Greenville, S. C.

move at a terrific speed if we are to pick fast. Don't forget that every time this roaring shuttle crosses the loom it must be brought to a *complete* stop before it can be picked again. Don't forget either, that this picker-stick must not deliver its full power at the start of the pick, but must gradually increase until the top speed is reached just as the picker-stick reaches the end of its forward stroke. This is the reason that pick-cams have the shape that they do. And in parting, remember that the harder you pick the firmer you've got to check to stop the shuttle, and the firmer you check the shuttle the harder you've got to pick to get the shuttle away from the binder's pressure on the next pick! Which first, the egg or the hen?

Question 5. Why has no material been successfully substituted for a leather check?

When chemists began making very successful imitation leather a few years ago, they started marketing it under very attractive trade names and made great inroads on the leather business. For some purposes these products were as good as leather, and in a few instances were actually superior. In retaliation for this activity, the leather council began advertising the slogan "Nothing can take the place of leather." Well, the leather people get my vote. I'm pretty much of a nature lover, and a nature worshipper, and I've noticed that nature is mighty apt to find a product for any need that may arise. Now, when an old cow stays out normally in rain, hail, sleet, and snow, when she gets the full beat of the noon-day sun and the bite of flies and other insects in summer, when she rubs her several hundred pounds up against a fence post full of staples and knots *and likes it*,—then I'm for the old skin that takes it all and still stays soft and pliable in spite of its strength and toughness.

Perhaps the best way to answer this question is by the process of elimination. Let's suggest some substitutes and see if they'll work. Now this check strap has got to stand an awful lot of pounding and rubbing. It is pounded by the picker-stick, and it is constantly being pushed forward and backward through the slide it works in. We couldn't use steel, because it would soon break the picker-stick, probably in a few picks. It can't be anything less yielding than leather, because you know that even a leather check-strap soon marks a picker-stick. How about a spiral spring? Well, you'd have to have one front and back, because the stick must be checked in both directions; they would be clumsy to attach; they would counteract each other and they would soon stretch and lose life. We couldn't use wood for the same reason that we can't use steel, with the additional reason that wood would chip and crack. We can't use rubber because the humidity would soon harden it and make it lifeless and brittle. Then, too, we can't use anything that is really elastic, because after the stick has been checked we don't want any pull exerted on it in the opposite direction. A rubber band would check it, but it would then pull it in the opposite direction. A rubber block at the outside end of the box would cause rebound.

There's only one other material I know to consider, and that would be reinforced duck or ticking. We have found that this is a pretty good substitute for leather in lug straps. However, it is my opinion that sliding backward and forward in the guide would soon fray the layers of fabric and thus obstruct the functioning of the picker stick by retarding or even blocking its stroke. The material must stand a hard blow, it must not be too hard but slightly resilient; it must be tough and not easily frayed by constant friction; it must be pliable enough to constantly bend and change shape without cracking; it must be heavy enough for its weight to offer resistance to the movement of the picker-stick, but not so heavy as to stop it abruptly; it must be unaffected by changes in temperature and humidity. After all, leather is doing a pretty satisfactory job in this capacity, and it doesn't cost an awful lot for what it does. I'll be mighty glad to see anything else that will fill the requirements I have listed above, but while I'm waiting, I think I'll put in an order for some more leather strapping.

Question No. 6. Where does the shuttle spend most of its time during weaving?

Well, Old Man Shuttle has two houses and is pretty much of a home-lover. He goes from one house to the other constantly, but he hurries mighty fast on the street between them, and when he gets in he stays as long as he can. As a matter of fact, he stays in one house or the other anywhere from 15 to 18 hours of the 24. Now please look at Fig. 2 once more and I'll let you off until the next contest. I want to call your attention to the larger circle, the one at the top. Don't let me start any argument about *exactly* when the shuttle leaves one box or gets home in the other. Of course the setting of the loom depends upon type of loom and nature of the fabric. In most looms the shuttle starts to move when the crank is at top center and gets home in the other box when the crank is passing around back center. Referring to Fig. 2, the shuttle leaves the box at *D-1* and is home in the other box at about *F-1*. This is just about ¼ revolution of the crank-shaft, which means that the shuttle is in the boxes ¾ of the time and in the shed ¼. This setting of course can be altered, and often is.

IN ADDITION to these three prize-winning letters, we hope to get the benefit of other ideas brought out in the other letters in the following manner. Beginning next month, we will publish digests of the remaining answers. Next month we will consolidate the different opinions expressed on Questions No. 1 and No. 2, following these with similar digests of the answers to the remaining questions. Where several men express the same general idea on a subject, we will select one as being representative, and publish this with others which throw a different light or present a different view of the matter. In this way we trust the reader will get the full value of all of the constructive opinions on each subject.—OLD-TIMER and THE EDITOR.

A GUIDEPOST ON SULPHONATED CASTOR OIL

SWANN S PRODUCTS

FEDERAL PRODUCTS

Softeners
Sizing Materials
Finishing Materials
Raw and Sulphonated Tallows
Penetrants
Stripping Agents
Dye Assistant
Degumming Agents
Weighting Materials
Fulling and Scouring Concentrates
Kier Assistants
Detergents
Trisodium Phosphate
Lubricants for Cotton, Wool, Silk, Rayon
Sulphonated Oils
Soluble Oils
Stainless Oils

Federal Castrol is our trade name for sulphonated castor oil and the guaranteed chemical analysis labeled on every barrel of Federal Castrol is for your protection. Only in this way can you be sure of the actual castor oil content you get, due to the fact that sulphonated castor oil when sold on a moisture content basis may have widely varying amounts of castor oil.

Federal Castrol is made by our own process and is a highly sulphonated No. 1 medicinal castor oil. It has the advantages of being readily soluble and practically odorless, and can be furnished with any guaranteed chemical analysis desired, at a corresponding range in prices.

A sample will be furnished without obligation to you.

Write for information regarding our complete line of textile oils and chemicals, also heavy special greases.

FEDERAL PHOSPHORUS COMPANY

BIRMINGHAM — WORKS — ANNISTON, ALA. — ALABAMA

DIVISION OF THE SWANN CORPORATION

Second Prize Letter.

By Bruce C. Baker,
Kershaw, S. C.

Question No. 1. Why is the crank-shaft box placed below the level of the bearing on the lay sword?

The solution of the problem may be arrived at by a comparison of two sketches, Fig. 4 and Fig. 5, one representing a crank-shaft with its bearing on a level with Pitman arm bearing on lay sword, and the other representing a crank-shaft with its bearing below the level of bearing on lay sword. These two positions of crank-shaft bearing are represented by Figs. 4 and 5. They are drawn to scale using a 28-inch lay sword, 10-inch Pitman arm and 2½-inch crank which describes a circle of 5 inches diameter. For the sake of clearness in comparison, the parts are represented by fine lines rather than drawn in detail. In both figures similar parts and positions are designated by similar letters and are as follows: *A* is rocker-shaft; *AB* is lay sword; *BC* is reed; *HB* is Pitman arm; *PH* is crank; *P* is center of crank-shaft bearing, and circle is path of crank as it revolves in the direction indicated. If we move crank to back center *L* the lay will be pulled back to where it will be the same distance from *L* as *B* is from *H*. This distance between the crank and lay are always held constant by the Pitman arm which connects them. When the crank is on the back center *L*, the lay will be in position *AG*. If we divide the segment connecting *B* and *G* which are front and back positions of lay respectively into four equal parts, designated by the additional positions *D*, *E* and *F*, and then measure from these points the length of Pitman arm to where the circle of the crank is intersected above and below center, we have the corresponding positions of the crank when the lay is in the additional positions *D*, *E* and *F*.

While the lay is moving from *D* to *B* and back to *D* again, the crank moves from *M* to *I*. While the lay is moving from *E* to *B* and back to *E* again which is half a stroke, the crank is moving from *N* to *J*. Similarly while the lay is moving from *E* to *G* and back to *E*, the crank moves from *J* through *L* to *N*. From the vertical center lines it will be noticed that the latter movement from *J* through *L* to *N* is considerably more than half the circle. As the speed of the crank is constant the greater distance will require a greater length of time to be traveled. Therefore, the forward half of the stroke of the lay from *E* to *B* and back to *E* again is at a higher speed than the backward half of the stroke from *E* to *G* and back to *E* again. Such a movement is called an eccentric motion.

A comparison of the two figures will show how the eccentricity has been increased in Figure 5 by dropping the crank-shaft bearing 2½ inches below the level of the pitman arm bearing on the lay sword. This has also served to take the crank-shaft out of the line of warp.

The eccentricity of the lay may be increased also by increasing the length of the crank and at the same time shortening the Pitman arm, but as this lengthens the stroke of the lay and results in the increased chafing of the warp the crank length is confined to narrow limits. With the aid of the increased eccentricity obtained by lowering the crank-shaft box below the level of the bearing on the lay sword, we are enabled to use a reasonably short crank and at the same time afford sufficient eccentricity to the lay to permit adequate time for shuttle to pass from one box to the other.

Question No. 2. What prevents the shuttle flying out of the loom when it is being run with only a reed, that is, no warp in it?

The shuttle receives its momentum when the crank-shaft is on top center and the lay is reaching the half-way position on its backward movement. It is at this point that the lay is moving at its highest speed. This movement of the lay from the front to the back while the shuttle is in the box would throw the shuttle directly behind the loom were it not for the back box plate preventing this. Since the loom is set to pick when the shuttle is moving at a high backward speed, the shuttle is forced against the back box plates and also against the reed while passing across the lay. This backward throw assisted by the race plate being lower next to the reed than on the outer edge prevents the shuttle being thrown out.

Question No. 3. Why do you set the harness cams to pick from the right-hand end with the back harness up—or do you?

Harness cams should be set so that the loom will pick from the battery end with the back harness down, as breakouts caused from improperly transferred bob-

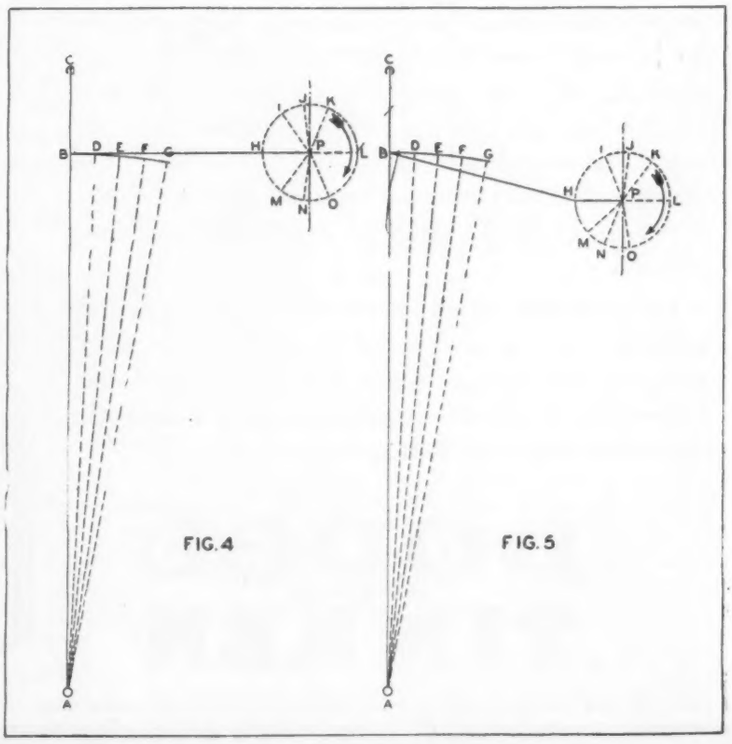
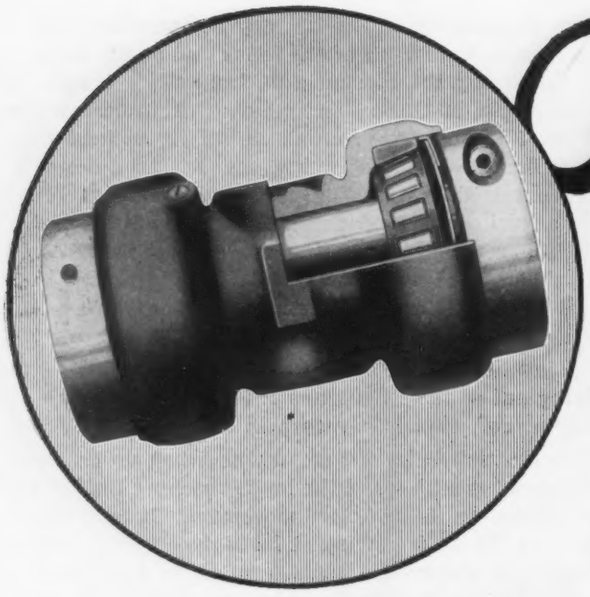


FIG. 4 FIG. 5



More Y.P.H.

YARDS PER HOUR

with DODGE-TIMKENS

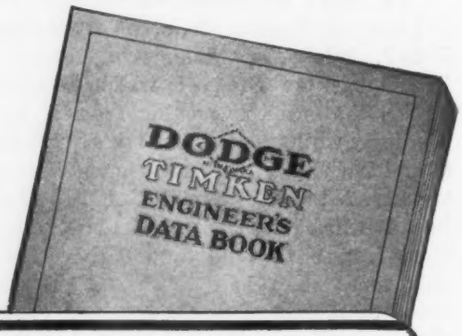
Production—Costs—Profits—actually all hinge on one factor in your mill—YARDS PER HOUR!

Anything that will give you more Y.P.H. —increases your profits—cuts your costs!

Judge Dodge-Timken Bearings on the Y.P.H. basis. They eliminate production slumps and stops. They outlive other bearings, working two, three or more years without repair or replacement. They encourage constant, even high speed production. You can speed up all your equipment to *more* Yards Per Hour when you rely on Dodge-Timkens. And all these yards—and extra yards—that you make, come through as clean as they do fast. *No oil spots at all,* of course. Dodge-Timkens are double-sealed against oil leaks.

Let your local supply house show you the added advantages and economies of Dodge-Timkens. Clip and mail the coupon below for your copy of the Engineer's Data Book—containing specific, authoritative information of definite value to you.

When production stops because of bearing trouble—think of Dodge-Timken performance and reliability. When batteries of looms are run at low speed because the bearings can't stand the gaff of profitable high speed production—think of Dodge-Timken smoothness and speed. When yards and yards of material are ruined by oil-spots—think of double-sealed Dodge-Timkens. When your power bill is high—think of Dodge-Timken power economy. The saving in power alone will actually pay for Dodge-Timken quality in your plant.



Please send me the Dodge-Timken Engineer's Data Book

*Name*_____

*Position*_____

*Firm*_____

*Address*_____

REG. U.S. PAT. OFF.
DODGE
MISHAWAKA
TIMKEN

DODGE MANUFACTURING CORPORATION, Mishawaka, Ind. *Factories at* MISHAWAKA, Ind., *and* ONEIDA, N. Y.

There's a Dodge-Timken for Every Industrial Need

bins will usually break the warp threads from the raised harness only. When this is the case, the smash hand can redraw the broken ends and start up the loom in much less time than when the threads are broken from the back harness. On modern looms all batteries are placed at the right-hand end of the loom, but some of the early models were equipped with right and left-hand batteries. Therefore, the setting of the harness cams should be determined by the hand of the batteries, and set so that the looms will pick from the battery end with the back harness down.

Question No. 4. What part or motion of the loom prevents its being operated at a higher speed?

The speed at which a loom may be operated is limited to that at which the shuttle may be properly driven from one box to another. The movement of the shuttle being a reciprocating motion rather than continuous, we are handicapped by a great loss of time and power in its movement. Were it not for this difficulty in laying the filling in the cloth, we would be operating broad looms at the same speed of narrow ones, and all at a much higher speed than is practicable at present. Therefore, the part of the loom which prevents it being operated at a higher speed is the pick motion.

Question No. 5. Why has no material been successfully substituted for a leather check?

Before the leather check strap can be successfully substituted for, some material or device must be offered embodying the merits of our present check, and in addition, prove its equal economically from the standpoint of initial cost and ease of application. When one considers the severe punishment to which a check strap is subjected each time the shuttle enters and leaves the box, he is more appreciative of the problems confronting any attempt to substitute other types of friction for the leather check. Because of this strenuous duty required of a check, mechanical sliding frictions and spring cushion devices have all been short lived, and inasmuch as no suitable material or fabric has been produced that will wear in this case like leather, any attempt to substitute for our leather check has failed to meet with success.

Question No. 6. Where does the shuttle spend most of its time during weaving?

A solution of this problem can best be arrived at by determining the time the shuttle spends in the boxes in comparison with the time required for shuttle to cross the race plate from one box to the other, as at all times it is in one of these positions.

If we take into consideration that the loom picks from the same position of the crank on both sides, that is crank on top center when the loom picks from the right-hand side, then after making a complete revolution is again on top center when the loom picks from the left-hand side, our problem is reduced to a comparison of the time the shuttle spends in one box with that required for the shuttle to pass across the race from one box to the other. Inasmuch as the crank-shaft makes one complete revolution every time the shuttle crosses the race and enters the box, then the time required for one revolution of the crank-shaft is the same as the time the shuttle spends in the box added to the time required for the shuttle to travel from one box to the other. With the usual timing of the pick and harness motion, that is, loom picking when the crank-shaft is on top center, and harness level when the reed is 2½ inches from the fell of the cloth, the shuttle will begin moving toward the opposite box when the crank-shaft reaches the top center and must cross the race and be entering the opposite box before the shed closes sufficiently to bind the shuttle. With the above timing of harness, shed will have closed when the crank-shaft reaches bottom center. Therefore, the shuttle has traveled across the race from one box to the other in less than half the time required for one revolution of the crank-shaft. During the remainder of the time required for the crank to reach the bottom center and then make half a revolution to top center again, the shuttle is in the box. Since the total of these two intervals is greater than half a revolution of the crank-shaft which has a comparatively constant speed, the shuttle spends most of its time in the box. Either or both of the foregoing settings of pick and harness motions may be timed earlier or later, but this will not affect the amount of time the shuttle spends in the box or in crossing the race.

Third Prize Letter.

By W. M. Jones
Lancaster, S. C.

Question No. 1. Why is the crank-shaft box placed below the level of the bearing on the lay sword?

Of the two possible answers to this question, the one of most importance to the weaver is that: it is so placed to facilitate having the bottom shed the tightest. If the bearing and box referred to were level, it would be impossible, or practically so, to have either shed tighter than the other one. Both would be of equal tightness and neither would be tight enough to stand the strain of the shuttle's passage over it. The shuttle would tear through the warp rather often, and usually it would be caused by the slackness of the thread over which it passed. To remedy this the crank-shaft box is placed lower than the level of the bearing on the lay-sword and the warp is held lower in the center of the loom than on either side, which causes the lower shed to always be tighter than the top one, and to have tension enough not to break or tear during the shuttle's passage. The other reason I referred to is simply that the most efficient way to apply force to an object moving in an arc is by a tangent at the mid-point of the arc described—with the lay arranged as it is—the tangent to its mid-point slants down toward the center of the loom, causing the box to be below the bearing.

W. M. Jones.

Question No. 2. What prevents the shuttle flying out of the loom when it is being run with only a reed, that is, no warp in it?

What a question!!! Downright cruel, but, here

goes: The lay, moving toward the center of the loom, has attained its highest velocity before the shuttle is thrown out of the box and is slowing up when this happens. The shuttle when thrown out of its box tends to continue in the same direction and with the same velocity in the motion imparted to it while it was in the box. This motion, if unstopped, would cause the shuttle to move on a wide curve in the direction of the center of the loom, but the reed stops it and causes it to move in a lesser curve and straight across the reed into the other box. Gosh! That sounds like Einstein —move in a curve and straight across the reed. Awfully complicated sounding, but it moves in two directions at once, so I guess it's a curve. Straight across the reed and toward the center of the loom.

Question No. 3. Why do you set the harness cams to pick from the right-hand end with the back harness up—or do you?

Another "jag" and, let's see—the first thing I was taught in weaving was to draw the first thread through the back right-hand harness eye and the last one through the front left-hand harness eye, for by doing so the work came more natural in drawing-in. With the harness so drawn in, the cams must be set to pick with the back harness down to have the filling pull always on the lower, always the tighter and outside thread of the selvage. Most everyone knows what a selvage looks like with the filling pull on an inner thread.

Question No. 4. What part or motion of the loom prevents its being operated at a higher speed?

Hummm—one can't have rapid motion unless it is smooth, and if it is motion about a fixed point it must be concentric. No motion on a loom, save a few, is concentric and I am of the opinion it would shake itself to pieces, regardless of strength of materials, if run much faster. There seems to be a sort of vibration point in such things. Once that point is reached they speedily shake themselves to pieces if the speed is kept up to that point. However, the main offenders in a loom are the lay and the pick motion. The lay must reach a high speed and come to a complete stop in the space of a foot or so, and any motion of that sort places a great strain on all parts of the object moving. And even if we did speed it up and it didn't explode or something of the kind, the shuttle would hop like a frog all the way across, to the great damage of warps. The loom seems to have reached its highest efficient speed in its present state of development, and to increase the speed would so increase the vibration that the life of its parts, especially those on the lay and pick motion, would decrease in far greater measure than the production would increase.

Question No. 5. Why has no material been successfully substituted for a leather check?

Whew! I bet the rubber salesmen howl about that one. It's true, nevertheless. One doesn't find as many good qualities in anything else as in leather, for the purpose mentioned. Leather has durability; so have a lot of other things, but leather has flexibility combined with lack of elasticity, and doggone few things have that. Seems kind of like Old Lady Nature put about the best qualities she could find in the hides of us animals—durability, flexibility and lack of elasticity.

Question No. 6. Where does the shuttle spend most of its time during weaving?

Oh—just knocking about! I nearly went blind trying to watch one, but I finally got it. It is out of the box only ⅛ or a little over, of its time. For every turn of the crankshaft the loom makes one pick and that action of picking takes ⅛ of a turn of the crank-shaft. To that add a little time for the shuttle to get across, I couldn't find out exactly, but it is in the box before the next ⅛ of a turn was completed. So I would say that between ⅛ and ¼ of a shuttle's time was spent out of the box, and the other ¾ to ⅞ was spent in it, and answer—in the box.

Report on Humidifying Practice.

THIS ABSTRACT of a report on humidifying practice, by a committee of the National Association of Cotton Manufacturers, is worthy of study by every mill executive. It gives first an outline of the different types of generally used equipment, indicating the logical application of each; and then offers the committee's recommendations of specifications by which humidifying equipment should be purchased.

EDITOR COTTON.

AS THE SITUATION now stands the principles involved in humidification have never been reduced to a standard practice, nor is it possible for a manufacturer to compare the bids made by the respective builders of humidifying equipment on a comomn basis or to determine the respective values lying behind the bids.

Through co-operation with humidifying engineers the present report has been developed, which it is hoped will be of assistance to those in need of humidifying equipment.

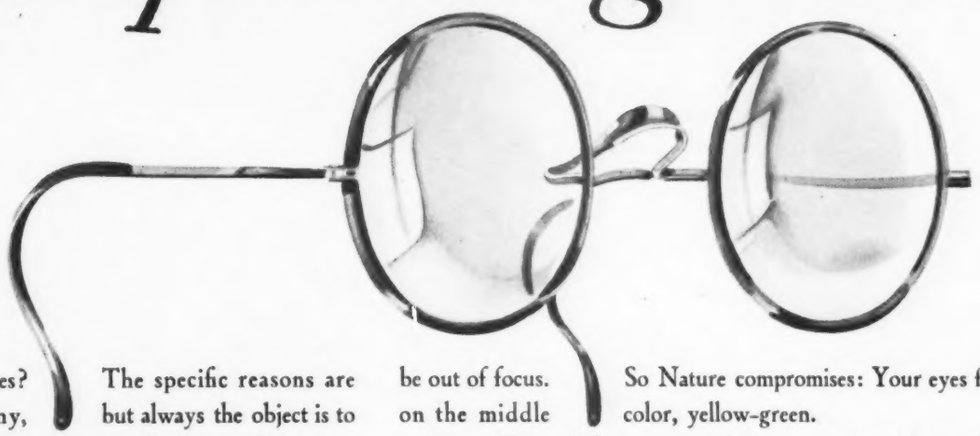
Types of Equipment.

The standard types of equipment which are now in wide use include the following:

Central Station Type. The method involves the conditioning of air in respect to both moisture content and temperature and its subsequent distribution to the rooms or departments where the desired atmospheric conditions are to be maintained.

The apparatus includes a humidifying or spraying chamber of large capacity, and ventilating fans and distributing ducts for conducting the conditioned air to its destination and effecting its proper distribution. The circulated current of air is first saturated with moisture in passing through the humidifier, relieved of free moisture by passage through eliminator plates, raised to the required temperature for distribution by passing through indirect radiation, delivered through the distributing ducts, and further heated as needed by radiation located either at the outlets of the distribution ducts or by radiation distributed in the man-

Why *do people wear glasses?*

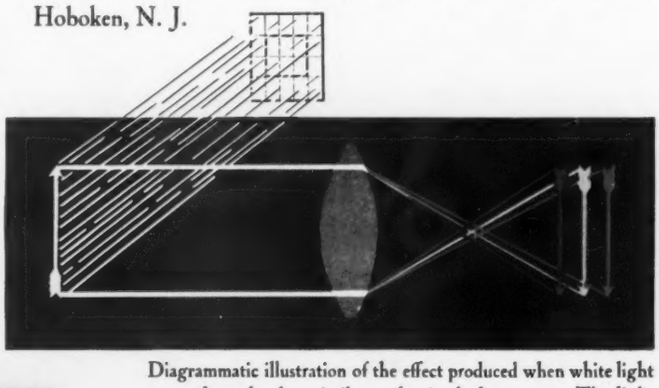


WHY wear glasses? The specific reasons are varied and many, but always the object is to improve impaired vision—to correct the focus of the eyes. Faulty focus you know, makes objects appear hazy—blurs outlines and strains your eyes.

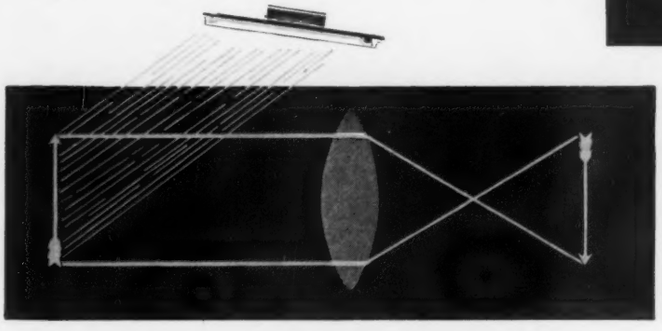
Weak eyes brought back to normal by the use of glasses, and even normal eyes without glasses, do not see objects as clearly as the construction of the eye permits. For there is a *natural* faulty focus of wholly *normal* eyes which is caused by the complex mixture of colored rays that compose daylight or "white" light.

Your eyes are unable to bring all these colors in white light to the same plane of focus in the eye. Should your eyes focus on a color at one end of the spectrum, say red or orange, the colors at the other end, blue and violet, would be out of focus. So Nature compromises: Your eyes focus on the middle color, yellow-green.

Cooper Hewitt light is composed almost entirely of these yellow-green rays—That's why all objects under Cooper Hewitt light are seen clearly and sharply without eye-strain. Have you read "Why Cooper Hewitt light is better than daylight?" A copy of this booklet is yours for the asking. Cooper Hewitt Electric Co., Hoboken, N. J.



Diagrammatic illustration of the effect produced when white light passes through a lens similar to that in the human eye. The light is split into its various colors only one of which can be focused sharply. The other colors being slightly out of focus tend to make the image hazy.



When Cooper Hewitt light which is 90% yellow-green passes through a lens similar to that in the eye, the image produced is sharp and clear, for the effect is practically that of a single color, and that the best-seeing color and the easiest on the eyes.

COOPER HEWITT

A General Electric Organization

(See next page)

Cooper Hewitt illumination in the Starr Knitting Mills, Pleasantville, N. J.

412 © C. H. E. Co. 1929

Where *Soft, Clear, Glareless Light* makes Needle and Stitch Appear Magnified

LOOK at these little electric sewing machines. Imagine how their needles zip along at an unguessable number of tiny stitches a minute! And realize how eyes must watch them closely, constantly—see them clearly, needle and stitch. Realize, too, the possibility of eye-strain from such close attention to detail and the likelihood of dazzle glare from shimmering needle and highly polished machine surfaces.

Yet the operatives of these machines see every small detail as clearly and sharply as if they were magnified. No glare, no dark shadows to hinder vision, cause eye-strain and lead to mistakes and waste of time, effort and material. For this room, like other departments of the Starr Knitting Mills at Pleasantville, N. J., is lighted by the Cooper Hewitt system of mercury-vapor illumination.

Note that these Cooper Hewitts hang high overhead, yet so perfectly does the long (50-inch) tube of radiant mercury vapor diffuse illumination and so soft and clear is this glareless light that there's "better than daylight" clarity *at the point of work.*

Each Cooper Hewitt installation is separately considered by our illuminating engineers. Construction of your building, machinery layout, etc., are taken into account and a scientific, modern plan of illumination individually applied.

An interesting booklet which explains the many Cooper Hewitt advantages is yours for the asking. Address: Cooper Hewitt Electric Co., 853 Adams St., Hoboken, N. J.

Not a mere claim—but a statement of fact

Cooper Hewitts are "better than daylight" not only because they give constant intensity at any hour but because they yield 90% yellow-green (the best-seeing) rays, and have none of the glare-producing qualities which are hard on the eyes. As a result, every detail becomes sharp and clear as if magnified, vision is more acute and the response of brain and hand is more rapid.

COOPER HEWITT

A General Electric Organization

See preceding page

ufacturing departments.

Equipment of this type can seldom be installed with real advantage except when the design of the factory as a whole includes every necessary provision for the heating, ventilating, humidifying and distributing equipment. The investment required for apparatus of this type is considerable.

From the standpoint of air purification this type of apparatus is superior to all others and is especially valuable where very fine and high grade products require guarding from deposits of atmospheric impurities which would cause damage by discoloration.

The saturating type of humidifier used in connection with this type of equipment will clear the air passed through it of mechanical impurities in suspension, such as lint and ordinary forms of dust. Extra facilities are required for the successful removal of soot and other smoky impurities which are of an oily nature.

It is difficult to produce a relative humidity higher than 65 per cent with this type of apparatus except by resorting to auxiliary local humidifiers for the introduction of more water vapor than can be readily supplied in the preconditioned air. The power consumed by the fans in circulating the large volume of air required against flue and humidifier resistance is a considerable factor, tending toward high operating cost.

As compared with the types of distributed humidifiers which are to be later described, central station equipment calls for such a high installation cost and operating expense that its use is less general than the more inexpensive types.

High Duty Humidifiers. This type of equipment is so well known as to scarcely require detailed description. It has been widely used for a great many years and has been developed to a high state of mechanical efficiency.

The cost of evaporating a gallon of water in equipment of this type is usually lower than that of any other type owing to its high mechanical efficiency and low power consumption. In a sizable system the investment per gallon of water to be evaporated is usually lower than that of any other type but in small systems the unit cost is likely to prove higher than that of atomizers.

In respect to air purification, the performance of this type is excellent. The air recirculated through the humidifier casing is relieved of impurities in the process but the degree of air purification is not as high as in the case of central station systems.

This type of apparatus is adaptable to any factory where the ceiling height is not less than 12 feet. It should not be used where processing involves the generation of lint in an unusual degree, but it is perfectly adapted to the needs of any department in a typical cotton mill.

Atomizers. Atomizers operated by compressed air are very widely used. As compared with high duty systems, the power consumption per gallon of water evaporated is high. The cost of installation is moderate.

In necessarily dirty departments where lint is extremely prevalent, atomizers can be operated with less frequent cleaning than any other type. No air purification is accomplished by atomizers except to the extent that the presence of humidity tends to prevent the formation of dust and lint. Atomizers can be successfully used in very low-posted rooms.

Centrifugal Humidifiers. This type is best adapted for use where little or no lint or dust prevails in the room atmosphere and for relatively small isolated departments. The power consumption per gallon of evaporation is likely to be higher than the high duty type. Centrifugal humidifiers also are not so well adapted to operate in connection with automatic regulation as other types.

Automatic Regulation. Automatic regulation of humidifying equipment is absolutely essential for deriving from the apparatus anything like its full value. Hand controlling of humidifiers results in large peaks of humidity and in low depressions and it is quite impossible to regulate room conditions uniformly by hand. On this account the use of automatic regulation is regarded as indispensable.

Adequate Evaporative Capacity.

It is the function of the humidifying system when properly designed to meet in an adequate way the demands for humidification. Adequate capacity in the south is quite different from adequate capacity in the north, and it varies from process to process and from room to room.

The capacity of a humidifying system should be sufficient to evaporate water at a rate which will produce the required relative humidity in every department, even when window transoms are opened sufficiently to avoid discomfort to operatives during the hottest weather which commonly prevails in summer. Translating this general statement into more specific terms, your committee recommends the use of sufficient evaporative capacity to maintain relative humidities not less than, and dry bulb temperatures not greater than, the following:

For Weaving	85 per cent relative humidity at 84 degrees F.
Spinning and Twisting	From 55 per cent at 90 degrees F. to 70 per cent 85 degrees F.
Spooling, Winding, Warping and Cloth Room	70 per cent relative humidity at 85 degrees F.
Carding, Combing and Roving	55 per cent to 60 per cent relative humidity at 85 degrees F.

Evaporative capacity corresponding to this scale is the best means of preventing lowered operative efficiency in hot weather, and of insuring the manufacturer's ability to keep his factory running and so maintain production even through severe hot spells.

This must not be taken to mean that the above requirements must be met under all conditions, but as a general rule the room will by no means be over-equipped if the above requirements are met.

Your committee is familiar with the conditions in numerous mills both in northern and in southern territory, which have been equipped with humidification to the scale of capacity above outlined, and is unani-

mous in the conviction that the cost of installing and operating equipment on this scale with first-class regulation results in operating economies which amply justify the corresponding investment and cost of operation.

The uniformly favorable and comfortable atmospheric conditions attained under this practice and the consequent improvements in processing and in operative efficiency assure gains in both quantity and quality of product which are of the greatest value. It must be realized that hot weather puts to a severe test the operating capacity of the humidifying system. In order to meet hot weather demands, the above schedule is believed to be conservative and ample as a definition of internal atmospheric conditions.

Further, it is believed that additional investment in any higher scale of capacity would be unwarranted. In short, it is believed that the capacity which leading dealers in humidifying equipment are recommending today is based upon sound engineering and commercial experience, and has probably reached the much desired "point of diminishing returns." To go a shorter distance results in manufacturing losses, while there is no great gain in going further.

The scale of capacity above recommended is exemplified only in installations which represent the most advanced practice of the last four or five years. The majority of mills equipped in previous years and many quite recently equipped are suffering the disadvantages of inadequate capacity. Many such mills would reap great advantage and marked improvement in quantity and quality of product by advancing the capacity of their equipment to the more modern standards coupled with effective regulation.

Methods for Determining Capacity.

The problem of determining correct capacity has received a great deal of attention from humidifying engineers. The temperature and humidity which will prevail outside the factory in hot weather and the rate at which heat is liberated in different portions of the factory by power consumption and from other sources are the principal factors in creating the demand for moisture and rate of evaporation required in the several processing departments of a factory.

The determination of the proper rate of evaporation for maintaining the required humidity and temperature in each department of a factory is a problem for an expert. A sound general method for solving such problems has been fully described in a paper presented at the meeting of the National Association of Cotton Manufacturers in Boston, Massachusetts, October, 1927.

Recommendations to Intending Purchasers.

In considering the purchase of equipment the owner or his engineer should first state specifically the scale of humidities and temperatures above recommended or its proper equivalent. The prevailing outside conditions of temperature and humidity to be expected during typically hot weather in the locality should be carefully determined by a competent engineer and specified in terms of dry bulb temperature and wet bulb depression.

Contractors who are to be invited to submit tenders should first be required to determine the evaporative capacity of equipment which will be sufficient to produce the stated inside atmospheric conditions for each department against the stated outside atmospheric conditions, and to recommend equipment of suitable type and of corresponding capacity. The engineers of reliable dealers should be competent to estimate the heat liberation which will prevail in the factory, and when capacity has been determined by competent engineers of different dealers it should be found to compare with reasonable consistency.

Reliable dealers should be willing to specify the evaporative capacity which their equipment will deliver for each department and to "stand behind it" with a binding guarantee to protect the purchaser should any reasonable doubt arise as to the proper performance of the equipment after installation is completed.

Humidifying equipment should not be purchased as if it were mere merchandise. The value which the purchaser ultimately receives will depend not so much upon the type of apparatus finally selected, the number of units which it comprises, nor the cost per unit as upon the ability of the equipment as a whole to deliver the total evaporative capacity required in a satisfactory manner.

The real value of equipment lies not so much in the apparatus itself as in the results produced by the apparatus. Price therefore should be taken into consideration only when and after the question of choice of equipment has been reduced to tenders of apparatus which may differ in type and in detail but which correspond closely in respect to evaporative capacity.

Final tenders in the form of contract proposals should be taken up for decision only after all competing bids have been reduced to identical specifications in respect to humidity and temperature to be maintained in each department against the stated outside temperature and wet bulb depression, and in respect to allocation of equivalent evaporative capacity to each department. Under these circumstances any tender in which the evaporative capacity specified and guaranteed is materially less than the rest must be regarded as representing correspondingly low value, in spite of any promise expressed or implied to maintain the same atmospheric conditions as tenders which specify higher capacities. Evaporative capacity which can be relied upon is the only safe yardstick for comparing values in installations of distributed humidifiers. Tenders should therefore be carefully compared not only in respect to gross cost of installation and maximum power consumption but also in respect to cost of installation and power consumption per gallon of capacity.

Guaranteed delivery of the stipulated evaporative capacity and that power consumption will not exceed a specified maximum are essential to protection of the purchaser. If the apparatus finally purchased should fail to deliver the guaranteed capacity, the contractor should not only furnish such additional apparatus as may prove necessary to attain the capacity at his own expense, but should also be properly penalized if power consumption is thereby increased beyond the speci-

fied maximum. Without such protection purchasers run the risk of finding themselves burdened with most excessive costs of operation and attendance.

In comparing tenders it will frequently be found that the higher priced equipments represent the best value in terms of evaporative capacity and cost per unit of capacity. It may happen, for instance, that the difference in cost between two competitive tenders is more than offset by the difference in annual cost of operation due to power consumption alone. It is seldom wise to award contracts to the lowest bidder because of price alone for close study will usually bring out considerations of capacity, quality and cost of operation which, when properly appraised, are likely to more than offset considerable difference in price.

Proof of Satisfactory Performance.

The better known types of apparatus have frequently been tested by disinterested engineers. Some types of equipment are known to be capable of performance to the full extent of the capacity claimed for them by their makers, while others are known to fall considerably short of such claims when subjected to the test of mill conditions day in and day out.

The purchaser of an equipment should not fail to make sure he has received what he has specified and paid for in the way of performance. He has a right to insist, upon the submission of satisfactory evidence, that an equipment as finally installed will perform as represented.

If purchase has been made under the recommendations and supervision of a competent consulting engineer, the latter will require and receive proof as a matter of course. While it is difficult to formulate any general method which purchasers can use intelligently for absolute determination of capacity, the following recommendations may be of assistance:

Upon the arrival of hot summer weather the prevailing temperature and humidity should be carefully observed, using care to see that ventilation is kept within bounds by the restriction of transom openings to a point which will permit the automatic regulators to function occasionally so that practically the entire evaporative capacity will be utilized. Under these conditions the temperature and humidity prevailing inside should be as specified.

If the atmospheric conditions fail to meet the specified performance the burden of proof will fall upon the contractor, who should be called upon to prove by actual test that the equipment is evaporating water at the rate specified, and the test should be conducted under the supervision of a competent engineer.

The facts as thus determined should prove whether the contractor has performed his obligation and, if not, the nature and extent of the claim which the purchaser may justly enforce against the contractor.

Carolina Specialty Represents Sipp Eastwood Corporation.

The Sipp Eastwood Corporation, of Paterson, N. J., representing a consolidation of the Sipp Machine Company and Benjamin Eastwood Co., manufacturers of warpers, winders, quillers, coppers, etc., have announced that they will be represented in the southern states by the Carolina Specialty Company, of Charlotte, N. C.

Colloidal Olive-Oil

for warp-sizing

ask for specific formulas

E. F. Drew & Co., Inc.
15 EAST 26th STREET
New York, N. Y.

BOSTON, PHILADELPHIA, CHICAGO
ATLANTA, GA.

MEET THE MOREHEAD ENGINEER

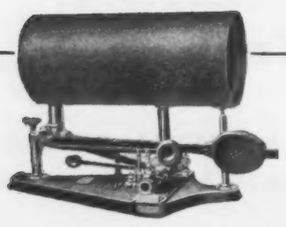
He Will Help You Bring About the PROMPT REMOVAL *and* PROFITABLE DISPOSAL *of* ALL *Condensation*

For 36 years the Morehead Engineer has devoted himself exclusively to IMPROVING steam drainage and boiler feeding, in thousands of plants all over the country. In all of these plants . . . many of them similar to your own . . . he has installed the Morehead Back-to-Boiler System, which performs these fundamental and vitally important services:

1. Drains all kinds of steam-heated apparatus . . . *immediately* and *thoroughly.*
2. **Enables steam-heated apparatus to work at full capacity, thus *increasing production* and *improving quality* of product.**
3. Handles water of condensation at any temperature—212° and above—the higher the better.
4. Automatically *returns* all condensation to boilers at *original high temperature* . . . thus saving valuable heat units in excess of 212° F.
5. Supplies the boiler with pure, hot, distilled feed water which deposits no scale and, in addition, acts as a most efficient boiler compound in purging the boiler of accumulated scale and dirt.
6. Uses only *ten per cent* of the steam that is required by a pump doing the same work.
7. Eliminates need for a lifting pump, taking the place of such a pump and operating as simply as the law of gravity.
8. Definitely insures *fuel savings* and *lower operating costs.*

MOREHEAD MANUFACTURING CO.
Department C DETROIT, MICHIGAN

Morehead
Back to Boiler
SYSTEM



MOREHEAD MANUFACTURING CO., Department C Detroit, Michigan (417)

I'd like to have your interesting 44-page booklet, giving helpful information regarding the Morehead Back-to-Boiler System. This will, of course, place me under no obligation.

Name_____

Company_____ Address_____

City_____ State_____

More Comments on Roll Weighting.

EDITOR COTTON:

In the April issue of COTTON appeared an article by me relative to the correct weighting of spinning frame rolls. This, however, did not meet with the approval of "F. A. F. (N. C.)," due to an error in the solution, and it is the wish of the author that this article suffice to thank "F. A. F." for making this correction.

To augment the aforementioned discussion, "CONTRIBUTOR No. 4613" enters his viewpoint in the August issue of COTTON, intimating that apparently someone was all wet, possible showers predicted for the future if someone did not redeem himself.

As a matter of interest let us consider two of the sketches which have been submitted by former contributors.

Fig. 1 is representative of the sketch shown in the April issue of COTTON, while Fig. 2 is called by "F. A. F. (N. C.)," in his article in the June issue, a schematic drawing of Fig. 1.

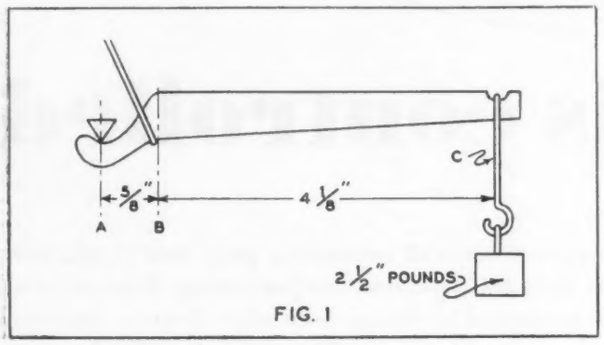


FIG. 1

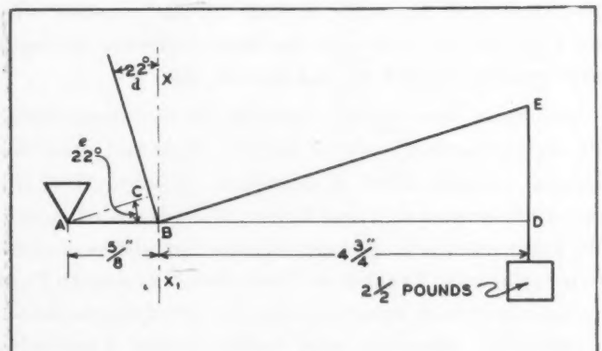


FIG. 2

The solution as given by "F. A. F." is as follows:

$$\text{Angle CAB} = 22 \text{ degrees}$$

$$\frac{AC}{AB} = \text{Cos } 22 \text{ degrees}$$

$$AC = \text{Cos } 22 \text{ degrees} \times AB$$

$$AC = .927 \times .625 = .579$$

$$\text{Weight on stirrup} = \frac{W \times AD}{AC}$$

$$= \frac{2.5 \times 5.375}{.579}$$

$$= 23.2 \text{ lbs.}$$

It will be noticed that there has been a correction made, for if "F. A. F." is to have the correct moment arm, according to his sketch, for the force of the 2½-pound weight, he should have added ⅝-inch to 4¾-inch which gives as a final result 23.2 pounds instead of 20.51 pounds for the weight on the stirrup.

If we have a lever of the type shown by Fig. 3, the solution would be different from that for Fig. 2, but similar to the solution given in the April issue of COTTON. Fig. 4 is the same as Fig. 3 but introduces straight lines for simplicity.

In this case the fulcrum point is lower than the point where the stirrup acts upon the lever and therefore the ⅝-inch distance, which in the first case was the hypotenuse of the involved right triangle, now becomes a leg of the triangle.

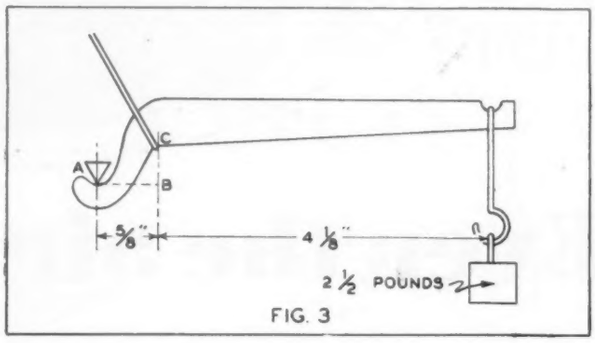


FIG. 3

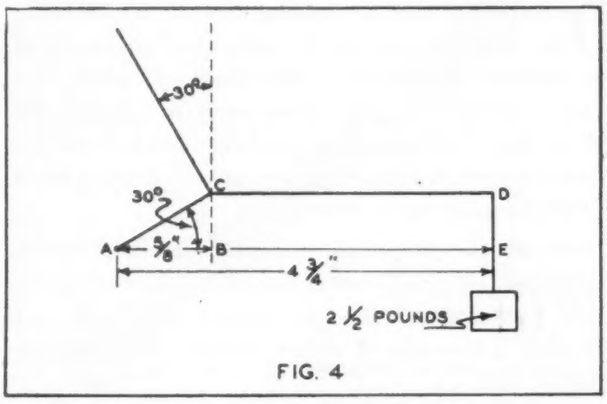


FIG. 4

It now follows to calculate the distance AC which is the moment arm of the stirrup force. This is done as follows:

$$\frac{AB}{AC} = \text{Cos angle CAB}$$

$$AC = \frac{AB}{\text{Cos } 30 \text{ degrees}}$$

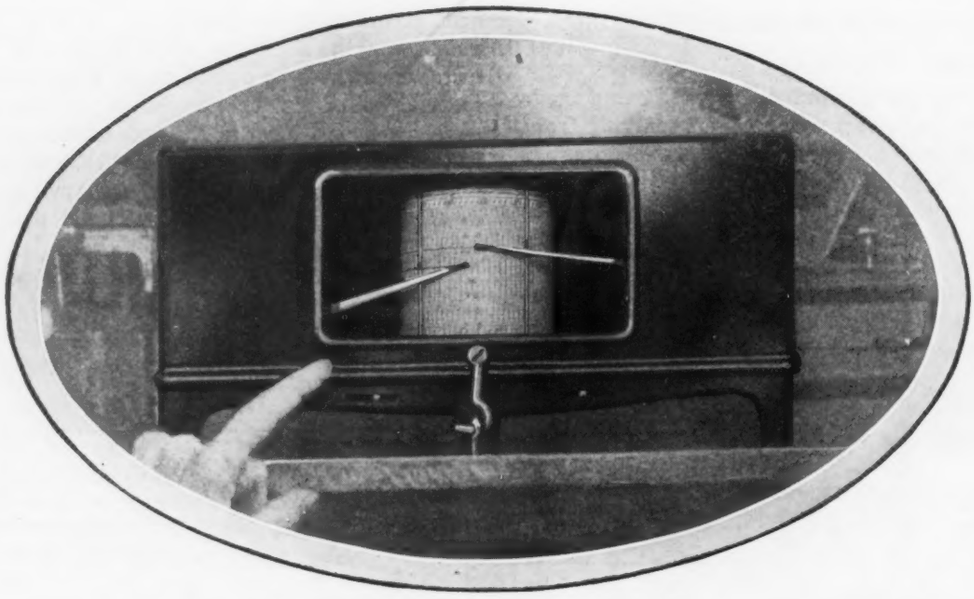
$$= \frac{.625}{.866} = .721\text{-inch}$$

Then weight on stirrup

$$= \frac{(2.5)\ (4.75)}{.721} = 16.47 \text{ pounds}$$

If corresponding data were used it would be found that the first case would give a greater weighting because of the reduced length of the stirrup force moment arm.

This of course is the theory involved in such a solution but for all practical purposes the distance AC may be measured by use of a steel scale and the solu-



Even the air is controlled

OUTSIDE, it may be raining or snowing, freezing or burning, but inside a du Pont rayon plant the weather never varies more than a fraction of a degree. Only one season from one year's end to the other. Giant refrigerating machines hold down the temperature in summer, and steam from power houses keeps it up in winter.

Not only the temperature, but the humidity also is maintained at a uniform constant. In every room in a du Pont rayon plant, air-washers blow the air through a cascade of water which cools and humidifies it.

But it is not enough to merely heat or cool, and to humidify the air. Temperature and humidity must be controlled within a fraction of a degree every hour of the day and night all the year around. Every room has its hygrometer, a marvelously sensitive instrument that records the slightest change of temperature and humidity during every minute of the day and night. Air-conditioning engineers, who are part of the large chemical control group of some two hundred or more experts, maintain a constant check over all the mechanism of temperature and humidity.

All of which is tremendously important in a rayon plant, because moisture and temperature enter so intimately into the characteristics of rayon. These two factors must remain constant throughout the entire process of converting pulp into rayon, even to the final inspection and packaging. If either factor is permitted to change even a few degrees, the rayon yarn will change too. This absolute control of temperature and humidity is one of the reasons why du Pont rayon is always the same uniform strength and quality, month in and month out.

Du Pont thoroughly understands the importance of such exacting control because it is not only the largest organization of cellulose chemists, but the most experienced. Long before the advent of rayon, du Pont was making such cellulose products as modern explosives, Pyralin and Fabrikoid. Today du Pont is making still other cellulose products—Duco, pyroxylin plastics, and Cellophane. Logically enough, du Pont knows more than any other organization about cellulose conversion. Du Pont's chemical supremacy for more than a century and a quarter is reason enough for preferring du Pont rayon.

Du Pont Rayon Company, Inc.
2 Park Avenue, New York City

Member Rayon Institute of America, Inc.

DUPONT RAYON
REG. U.S. PAT. OFF.

Produced by THE leading chemical organization

tion would be:

$$\text{Weight on stirrup} = \frac{(AE)\ (W)}{AC}$$

Relative to the angle used and in answer to the question of "CONTRIBUTOR No. 4613" in the August issue, the angle CAB is the angle which the roll stand makes with the horizontal, the greater the pitch the greater the angle.

H. H. (MASS.)

EDITOR COTTON:

One of the titles over an article in the "HOW OTHER MEN MANAGE" department in the August, 1929, issue of COTTON read: "Just Which is the Proper Way to Figure Weight on Top Rolls?"

Thus this question, which was also discussed in

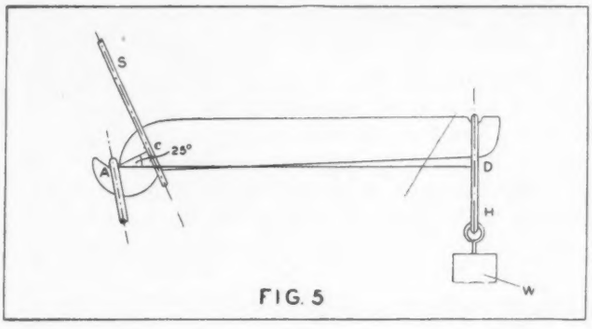


FIG. 5

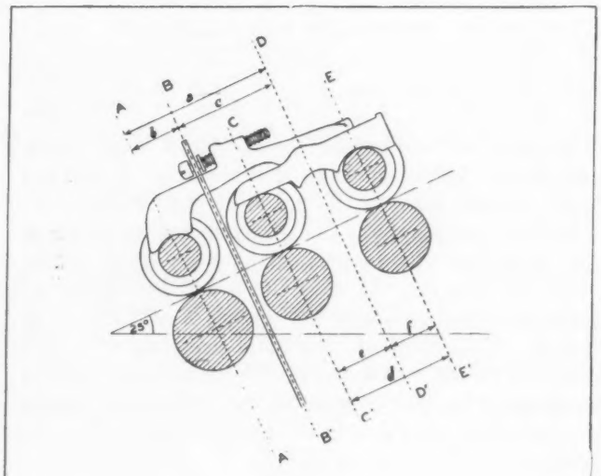


FIG. 6

the February and July issues of 1926, seems not to have been satisfactorily answered as yet.

First, I should like to answer "CONTRIBUTOR NO. 4613" who questioned the value given for one of the angles in Fig. 2 (which was Fig. 3 in the June and August issues of COTTON.)

I found angle d (See Fig. 2) to equal 22 degrees by measuring the angle formed by the stirrup and a vertical line. Upon re-measuring, however, I found this angle to be 25 degrees, as shown in my sketch herewith, Fig. 5. The error of three degrees was due to the smallness of the figure. It has no bearing on the principle of the calculations as given by me in the June issue of COTTON.

THE USE OF

ORIGINAL and GENUINE
"The Leather with the Hair on"
Bondaron
REG. U. S. PAT. OFF.

CHECK STRAPS
Mean
MONEY SAVED THRU
ECONOMY

EXCELLENCE of the leather plus fine workmanship, achieve in BONDARON CHECK-STRAPS the ultimate in Value, Service and Performance.

These straps unquestionably the highest grade manufactured today, have attained an enviable reputation. They possess great Strength and Durability and are always uniform in leather.

By standardizing on BONDARON Textile Products, many mills are saving money thru Economy, and, at the same time, making an investment in satisfaction.

Decide now—while the subject is before you—to place a trial order for BONDARON CHECK STRAPS. Prompt accomplishment of your order is assured. Send it in today.

Write for Sample

CHARLES
Bond
COMPANY

Leather Curriers, Importers and Manufacturers of Belting and Textile Leathers
617 Arch Street, Philadelphia, Pa.

I shall now take up the question concerning weight on top rolls.

Fig. 5 represents a weight lever in its working position on a spinning frame.

A is the fulcrum of the lever.

AC is a perpendicular line to the stirrup S.

AD is a perpendicular line to the weight hook H.

W is the weight acting through *H*.

x is the total weight on rolls acting through S.

Then $x = \frac{AD \times W}{AC}$, which is the correct formula.

Therefore, when $AC = 0.475$ inches, $AD = 4.375$ inches, $W = 2.5$ pounds, then $x = \frac{4.375 \times 2.5}{0.475} =$ 23.026 lbs.

It may be of further interest to determine separately the pressure on each top roll.

In Fig. 6, lines *AA'*, *CC'* and *EE'* pass through the

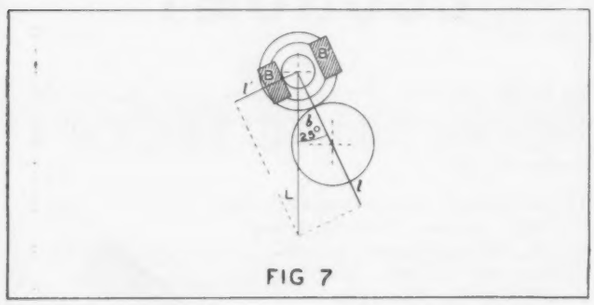


FIG 7

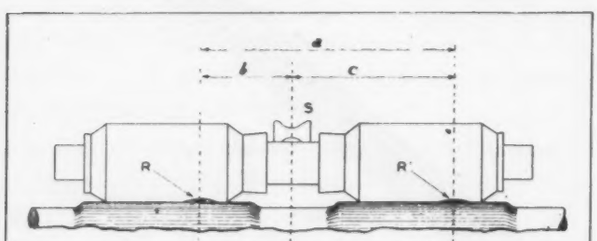


FIG. 8

centers of the front, middle and back set of rolls respectively. *BB'* is the center line of the stirrup and *DD'* passes through the point of contact of the two saddles. These lines also indicate the direction of the force acting on the rolls.

In the following calculations: W = total weight on top rolls acting through the stirrup ($W = x$ in previous formula), x = pressure on front roll, x_1 = pressure on middle roll, and x_2 = pressure on back roll.

Then,

$$xa = Wc;\ x = \frac{Wc}{a}$$

If y = total weight on back saddle,

then $$ya = Wb;\ y = \frac{Wb}{a}$$

and $$x_1 d = yf;\ x_1 = \frac{yf}{d};\ x_1 = \frac{Wbf}{ad}$$

and $$x_2 d = ye;\ x_2 = \frac{ye}{d};\ x_2 = \frac{Wbe}{ad}$$

If $W = 23$ pounds (from previous formula), $a = 1.84$ inches, $b = 0.6$ inches, $c = 1.24$ inches, $d = 1.3$ inches, $e = 0.71$ inches and $f = 0.59$ inches (all of these measurements were taken from the figure) then,

$$x = \frac{23 \times 1.24}{1.84} = 15.5 \text{ pounds (approx.)}$$

$$x_1 = \frac{23 \times 0.6 \times 0.59}{1.84 \times 1.3} = 3.4 \text{ lbs.}$$

$$x_2 = \frac{23 \times 0.6 \times 0.71}{1.84 \times 1.3} = 4.1 \text{ lbs.}$$

Proof, $x + x_1 + x_2 = W = 15.5 + 3.4 + 4.1 =$ 23 lbs.

A further problem is the determination of the pressure *between* top and bottom rolls or fluted rolls. This pressure equals the calculated weight acting on each top roll plus the pressure due to the weight of that roll.

By referring to Fig. 7, it will be seen that the weight of the roll as represented by L creates two pressures, l and l' against the bottom roll and the side of the bearing B. The figure produced by l, l' and lines parallel to them, together with L, is called a parallelogram of forces. In this figure, we have, where l = the pressure on bottom roll due to the weight of top roll, $\frac{l}{L} = \cos b$. Thus, $l = \cos b \times L = \cos 25$ degrees $\times L = 0.906 \times 0.625 = 0.566$ lbs.

The pressure between the rolls will thus be,

front set $= x + l = 15.5 + 0.566 = 16.066$ lbs.
middle set $= x_1 + l = 3.4 + 0.566 = 3.966$ lbs.
back set $= x_2 + l = 4.1 + 0.566 = 4.666$ lbs.

As there are two bosses to each roll, it is necessary to divide the values given by 2 in order to obtain the weight on each boss of the fluted or steel rolls.

Without roving between the rolls the pressure is equal along the whole width of the cot. When roving is running between the rolls there will be a point of maximum pressure where the roving *R*, *R'*, Fig. 8, is gripped. This point of maximum pressure will shift across the whole width of the cot due to the action of the guide eyes, and because of the following reasons there will be a variation in the pressure exerted on the roving:

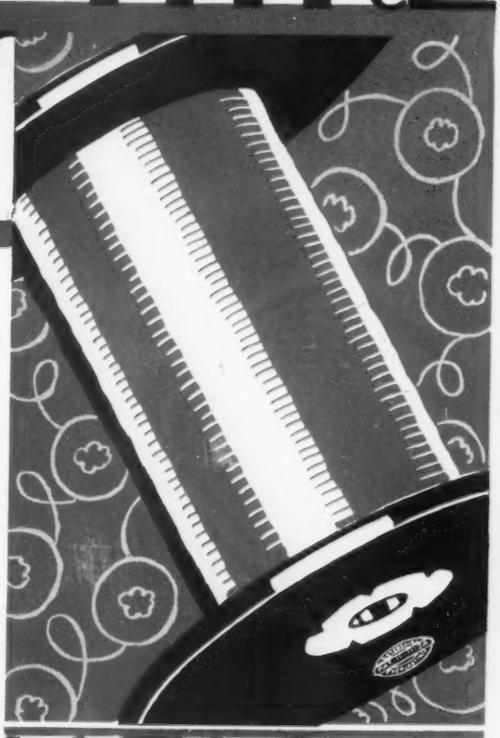
In Fig. 8, b and c represent the distance of the roving R and R' from the center of the saddle S, and W is the weight acting through the saddle. Then, pressure on $R = \frac{W \times c}{a}$, and pressure on $R' = \frac{W \times b}{a}$. Hence, as c is greater than b, it follows that the pressure on R is greater than the pressure on R'.

Moreover, as the values b and c vary, due to the traverse of the guide eyes, the pressures also vary.

Actually, this formula does not give the pressure exerted on the roving because the cot of the top roll yields to pressure to a certain extent and the whole width of the boss is in contact with the steel roll. The formula, however, shows that there is a variation in the pressure exerted on each stand.

As the pressure, when at its minimum must be sufficient to hold the roving securely, it follows that the

LESTERSHIRE SPOOLS



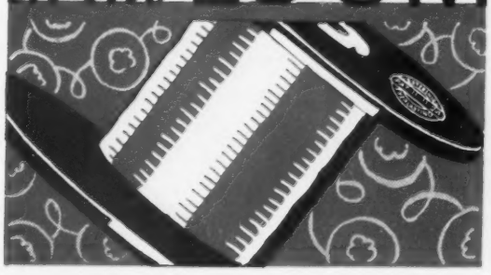
AN ounce of prevention is worth a pound of cure... a proverb particularly applicable to weaving. The key to the problem often is the trueness or *un*trueness of the spools employed.

On an untrue spool overlapping of the yarn when being wound occurs at the ends of the spool. When the process is reversed the yarn does not unwind freely. In consequence a tension is created which stretches or thins the yarn—or even breaks it.

This is not the case when Lestershire Spools are used. Their accuracy of construction gives an all-surface trueness—so yarn winds on smoothly and evenly, and unwinds without abnormal tension.

The use of Lestershires is the 'ounce of prevention' which avoids trouble at the loom—which results in better and more economical spooling.

HELP *to* PREVENT TROUBLE *at the* LOOM

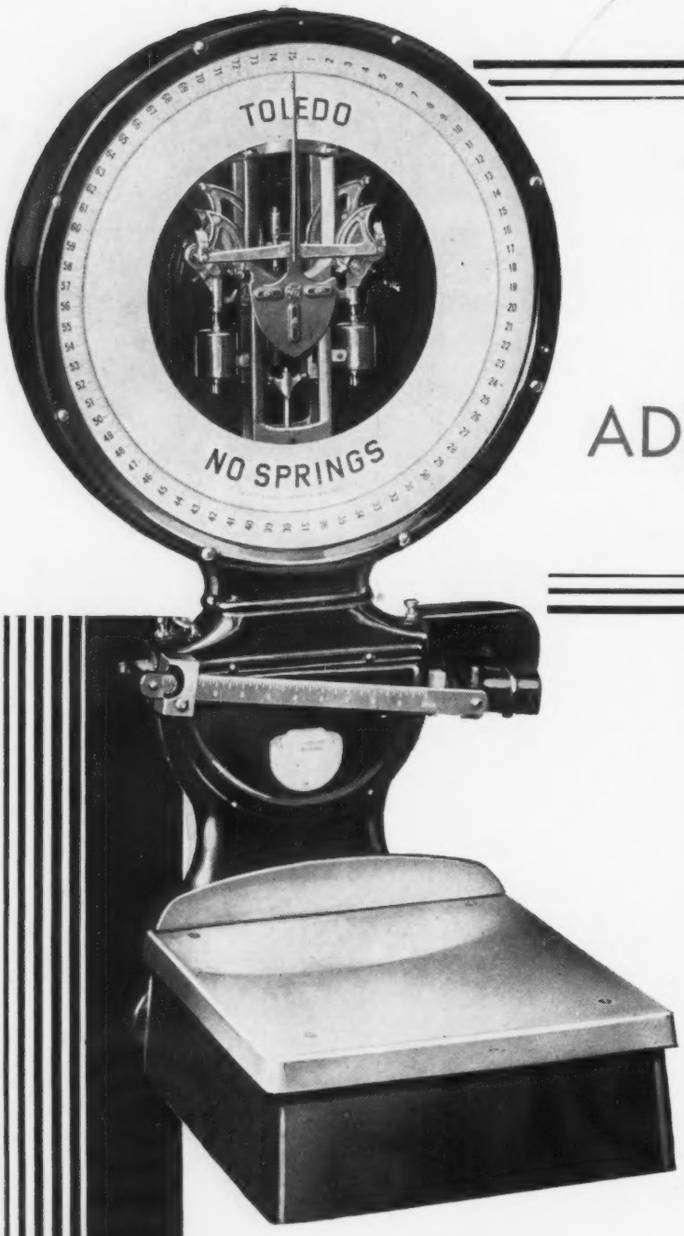


Satisfaction Guaranteed

LESTERSHIRE
TRADE FIBRE SPOOLS MARK
SPOOL MFG. CO.

146 Baldwin St.
Johnson City
New York

Southern Office:
519 Johnston Bldg.
Charlotte, N. C.



TOLEDO SCALE FOR BENCH WEIGHING. *Continuously accurate, simple to operate, easy to read. Ordinary help can operate it with extraordinary efficiency.*

AN ACCURATE SCALE IN THE PLANT IS WORTH TWO ADDING MACHINES IN THE OFFICE

YOU equip your plant office with the best adding and calculating machines that money can buy. Cost records *must* be accurate.

But what of plant scales? Your cost records, it is obvious, can be no more accurate than your weighing equipment. Incorrect weight figures are not, can not be caught in the office. Translated into money values, they become incorrect dollars' and cents' figures. Introduce error into the figures that control profits.

* * *

Toledo Scales are accurate. They operate by the scientifically correct gravity principle, the balancing of weight against weight.

Toledo Scales are simple in operation. Weighmen load the scale and read the dial. They work more easily, swiftly, accurately.

Toledo Scales are easy to read. Big dials . . . wide graduated reading lines . . . large, clear figures . . . knife-blade indicators assure high-grade weighing service from the average run of ordinary, unskilled labor.

The Toledo survey, which has uncovered serious weight losses in many plants, is offered without cost or obligation. Mail the coupon.

TOLEDO SCALES

NO SPRINGS — HONEST WEIGHT

Toledo Scale Company, Toledo, Ohio. Canadian Toledo Scale Company, Ltd., Windsor, Ontario. Sales and Service Headquarters in 181 cities in the United States and Canada, and in more than 50 foreign countries.

C-11

TOLEDO SCALE COMPANY, Toledo, Ohio
Please have the Toledo man see us about our weighing problems, with no obligation to us.

*Name*_____

*Company's Name*_____

*Address*_____

maximum pressure is considerably in excess of the pressure needed.

By having two sets of guide eyes always moving in opposite direction, *b* and *c* would always be equal, thus equalizing the pressure on the roving and permitting a reduction of the weight acting on the rolls—back and middle rolls only.

This variation in pressure on the roving is accentuated by heavy roving, hard leather cots with little elasticity, and is confined to the back and middle rolls only. The pressure on the front rolls is so great, and the cotton passing between the rolls is drawn into so thin a film, that it would be impossible to discover any variation at all.

F. A. F. (N. C.)

EDITOR COTTON:

I am going to fall in line by sending in my opinion on the correct method of figuring the weight on top rolls.

Although Fig. 11 is the only sketch that is necessary to show the method of figuring the weight on the top rolls, I am including Fig. 9 and Fig. 10 in order to show the method of calculation for various positions of the different forces.

By referring to Fig 9 it is seen that $\frac{2.25 \times 2}{2.25} =$ 2 lbs., which represents the force on the fulcrum—the same result is obtained for Fig. 10.

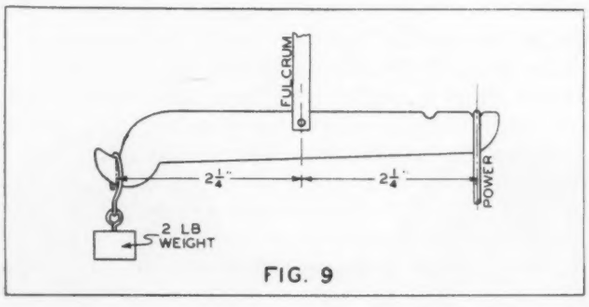


FIG. 9

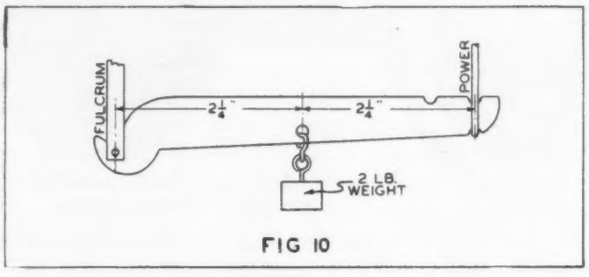


FIG 10

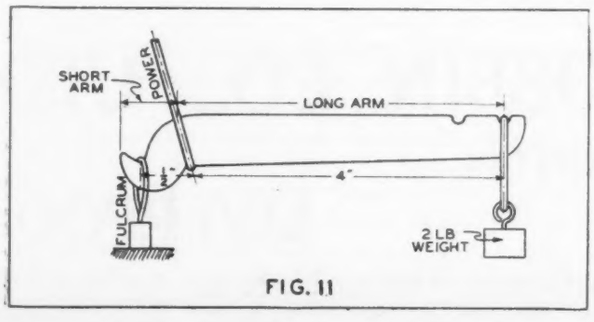


FIG. 11

Now Fig. 11 represents the problem that we mill men are confronted with. The rule used to get the weight on the power arm here is: Get the length of the lever from the point where the weight is hung to the point where the stirrup is connected, called the long arm, then get the length from the stirrup to the lever screw, known as the short arm, add the two together, multiply the sum by the weight hung on the lever and divide the product by the length of the short arm. Thus from Fig. 11 it is seen that $\frac{(4 \text{ plus } .5) \times 2}{.5} =$ 18 lbs., which is the weight exerted on the stirrup.

I hope that this will be suitable to publish, for if it is not correct maybe someone will give us the correct method.

CONTRIBUTOR NO. 4665.

"Maintaining Uniformity in Picker Laps."

EDITOR COTTON:

While looking over my copy of October COTTON, I notice the letter signed, "THIRSTY COTTON," with its excellent comments on my article on "Maintaining Uniformity in Picker Laps," published in August COTTON." I found in reading this that I had missed this contributor's very interesting letter published in September COTTON," and have read it carefully with considerable enjoyment, as it covers a phase of picker room control to which I have devoted considerable thought for a number of years.

About four or five years ago I had a very long and interesting discussion and some subsequent correspondence with the late Mr. O. G. Murphy, superintendent of the Shawmut Mill of the West Point Manufacturing Company on this very subject. Mr. Murphy made some of the same suggestions offered in your contributor's letter on "De-Humidifying a Picker Room," but thought that the cost would be prohibitively expensive. I suggested to Mr. Murphy that where sufficient space was available, it might be possible to install a conditioning room for picker laps, and keep at least one day's supply of laps on hand in this room. The laps would be trucked into the room and left on the trucks during the conditioning period. The trucks to be taken in one end of the room and out the other, and progressively moved forward as old laps were taken into the card room and new laps brought in from the picker room; this preventing unaged laps getting to the card room. It was proposed to humidify this conditioning room to a point which would give the same regain in the laps at the end of the conditioning time as they should have in the card room. All the laps upon being removed from the conditioning room were to be weighed and distributed according to weight on lap trucks painted different colors. Each color corresponding to a difference of one-half pound in the weight of the laps. Each different weight of lap was to be run on cards set for that particular weight. Obviously this would result in practically even sliver.

Nothing ever came of this conversation, but it was followed by numerous talks with mill men on this subject, and I was fortunate in getting some very valu-

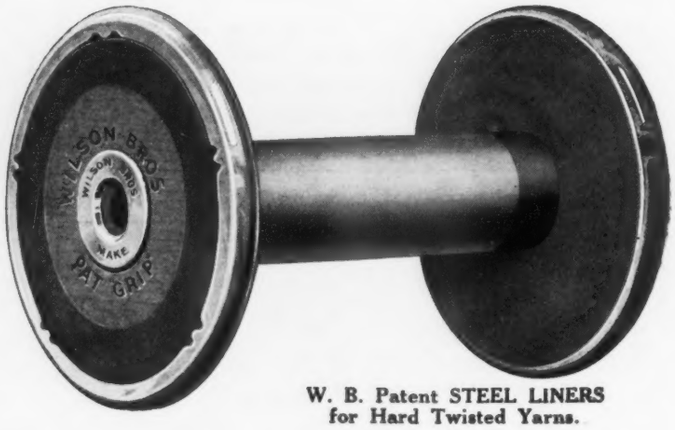
WILSON BROTHERS BOBBIN CO. LTD.

BOBBINS & SHUTTLES

W. B. Pat. "GRIP" SHIELD.
Absolutely Secure.

TRADE MARK

CARDROOM TUBES, RING BOBBINS, WINDING BOBBINS, PIRNS, &c., &c.



W. B. Patent STEEL LINERS
for Hard Twisted Yarns.

Largest Makers in the World.

WILSON BROS. BOBBIN CO., LTD.,

GARSTON,

LIVERPOOL.

Telegrams: "NUGGET, LIVERPOOL."
Codes: A B C, A1, & Marconi.

—Agents **LEIGH & BUTLER,** *Boston, Mass., U. S. A.*

able information from a number of different sources. There are several mills in the United States that attempt to humidify their picker rooms. I use the word "attempt" because of the fact that I seriously question the possibility of properly humidifying a picker room under the conditions described by some of the persons trying to do it. It requires an enormous volume of water vaporized in the air to humidify a large picker room unless the air is re-captured and circulated again and again through the pickers. Furthermore, almost every picker room is frequently subject to excessive regain, as pointed out in your contributor's letter, and this condition can only be remedied by de-humidifying the air in the picker room; a very expensive process where such a large volume of air has to be treated.

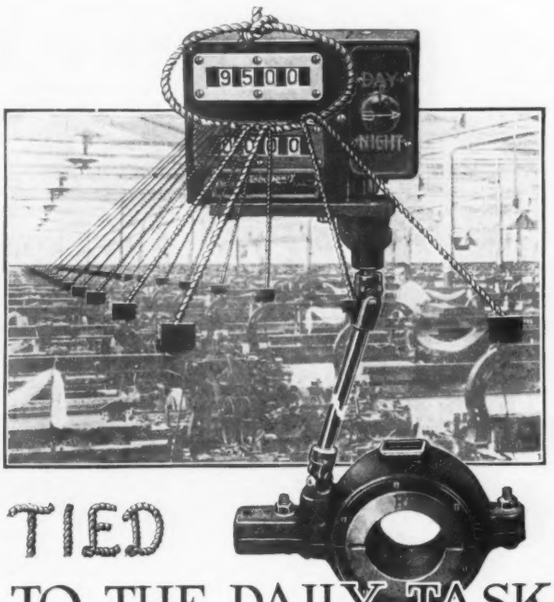
There is at least one mill in this country that has been recirculating the same air over and over again through the picker, but of course this method is open to the objection that the dust and speck ordinarily removed from the cotton and blown to the dust house is not taken out where the air is re-circulated.

The simplest method of correcting lap weights is undoubtedly that of merely making allowance for the existing regain condition at the time the lap is taken from the finisher picker. It is relatively immaterial whether the lap contains five per cent moisture or 15 per cent, provided that it has been made proportionately light or heavy, so that upon coming to the standard condition in the card room, it will contain the proper amount of actual cotton.

I am glad that your contributor brought up the question of correcting lap weights by means of instruments which will give the relative humidity, as I covered this briefly in my article, and think that possibly it needs a little more elaboration.

The customary instruments used for determining relative humidity are either hygrometers or psychrometers. The ordinary hygrometer is actuated by a small bundle of hairs which contract and expand with changes in the moisture in the air. Obviously, the accuracy of this instrument depends on proper calibration and continued uniformity of reaction on the part of the hairs to moisture. I have it on the authority of several mills making duck, tire cord, and other goods which require continuous daily laboratory tests, that their hygrometers need frequent recalibration to keep them accurate, and, of course, the average cotton mill, almost completely without laboratory equipment, is not in a position to calibrate hygrometers, and if the hygrometer should get seriously out of calibration, the result of the effect on the weight of the laps might be far more disastrous than not making any correction at all.

The psychrometer determines relative humidity by indicating the wet bulb depression as compared with the dry bulb temperature, and either a psychrometer or a hygrometer will give the relative humidity at the exact instant and point where the reading is taken; there being almost no lag in their operation. Several recent experiments with psychrometers showed that at four different points in the same room, four rather widely different humidities were recorded. Operating a psychrometer near a closed window with the sun



TIED TO THE DAILY TASK

THESE looms are tied to the daily job of making their "quota" of picks. Production checked on Veeder - Root Pick Counters. Held to the standard task.

You can tell the production you *ought* to get—in picks per day, per loom. You can tell *which* looms may lag behind. Which *weaves* are responsible.

The fact that you *know* what each man does, leads all to do their best. Keeping production high; labor-cost low.

Veeder-Root Textile Counters can be applied to every machine and work-situation in a mill. They will help you to solve any production-problem or labor-problem. Write for Textile Counter booklet or ask for a trial installation.

Veeder-ROOT INCORPORATED HARTFORD, CONN.

General Southern Representative:
W. A. Kennedy, Johnston Bldg., Charlotte, N. C.
Special Representatives for North and South Carolina:
Carolina Specialty Co., Charlotte, N. C.

One of our largest installations
Courtaulds, Nuneaton, England

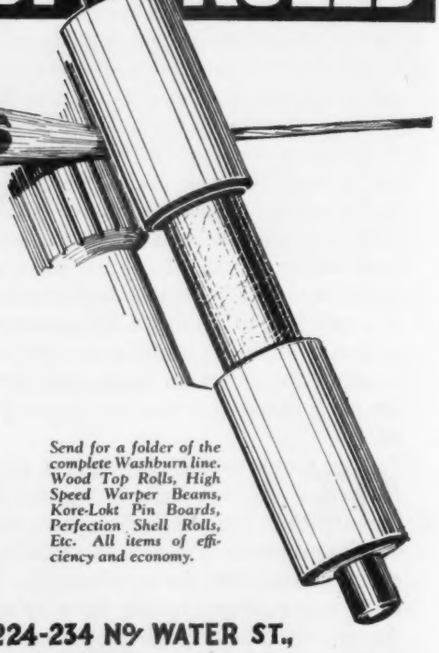
EVERY machine in this room is a Johnson Sizer—part of the installation of these machines at Courtaulds', Nuneaton, England, plant. This concern also has Johnson Sizers in operation in its other plants in England, on the Continent, in the United States and Canada.

Send for descriptive circular.

CHARLES B. JOHNSON
10 Ramapo Avenue Paterson, N. J.

WASHBURN WOOD TOP ROLLS

NO COCKLED YARNS



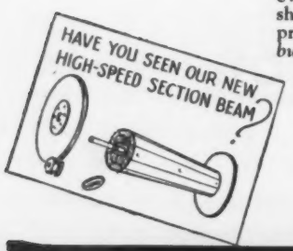
One way to get better and more uniform yarns of higher tensile strength off your spinning frames is to use *Washburn Wood Top Rolls*. Furthermore, you will be able to materially increase draft within the limits imposed by considerations of quality.

This is not a theory or buncombe, but an established fact, proven and re-proven by unbiased tests made in innumerable mills on all count yarns, standard or long draft.

The following concise description will explain why. *Washburn Wood Top Rolls* are "loose middle top rolls". They require no weighting. The sheepskin covering over felt and wood maintains a delicate tension and has more resiliency, thus producing a more even yarn of greater strength with less "ends down". The steel shafts fit into standard cap bars and saddles and take wear surprisingly well. And here is another interesting feature. *Washburn Wood Top Rolls* need no resetting when changing the staple of cotton or numbers.

Shall we send you a group of test cards showing actual details of results in other mills, or would you rather have our engineer call?

Send for a folder of the complete Washburn line. Wood Top Rolls, High Speed Warper Beams, Kore-Lokt Pin Boards, Perfection Shell Rolls, Etc. All items of efficiency and economy.



WASHBURN
IF IT'S ROLLS, WE MAKE THEM

224-234 N9 WATER ST.,
NEW BEDFORD, MASS.

shining through it will give an entirely different result from the reading obtained if the same window is open and a slight draft blowing through it, and a difference will be noted if the psychrometer reading is taken only a few feet away from the air warmed by the sun's rays coming through the window. Consequently, to obtain accurate results with any quick acting instrument like a hygrometer or psychrometer, it is necessary to take several readings and average them, which, of course, adds to the inconvenience and time required.

Your contributor, in the third paragraph of his October letter, outlines the same general method of applying the correction that I described in my article, except that he adjusts on the basis of relative humidity rather than regain. I would direct the attention of your contributor and all of your readers to the fact that the regain varies with the temperature at the same relative humidity. I wish to emphasize this particularly, as I have talked with some very able mill men who did not know it. Reference to any standard chart giving regain at different relative humidities will show that not only relative humidity but the temperature must be taken into consideration. There is an appreciable difference between the regain with a relative of 60 and temperature of 90 and a relative of 60 and temperature of 40. Owing to the fact that such an immense amount of air must be circulated through the pickers, it is impossible in many picker rooms to control the temperature within anything like the limits that it can be controlled in the body of the mill, so that where fluctuations of the relative humidity in the card room or spinning room might be very closely proportional to the fluctuations in the regain, this might not be at all the case in a picker room where the temperature varies considerably during the day.

Of course it is better to correct the weight of laps approximately than not to it at all, unless the instrument used in the correction is so inaccurate that the approximation falls wide of the mark. Many mills have been regulating their lap weights with hygrometers, and have found so much improvement in the evenness of their work that they are naturally quite enthusiastic about the proposition, but it would seem that if a thing is worth doing at all, it is worth doing in a thorough and painstaking manner, using the best equipment available for the purpose, and I still feel that my original statement about the unsatisfactoriness of correction from relative humidity readings needs no modification.

Another advantage of weighing a sample of cotton to determine regain is that the apparatus used can be positively and accurately checked and calibrated without special or elaborate equipment. The hygrometer is usually calibrated by means of a psychrometer, and as mentioned before, unless the psychrometer is read several times, and the readings averaged, there may easily be an error in its result. Furthermore, when the relative humidity is accurately determined by means of the psychrometer, and the hygrometer has been adjusted to read that relative humidity, there is no certainty that the instrument will accurately represent some other relative humidity, and an exact calibration of a hygrometer requires checking it at several

THAT is why the air in the various departments of textile mills is artificially impregnated with moisture.

Cotton, silk or worsted yarns absorb moisture and become stronger. The fibres lie more nearly parallel in the preliminary operations of carding and drawing thus making it possible to spin yarn of more uniform quality.

But, you can't maintain relative humidity at a constant degree unless room temperature is controlled!

Condensation of moisture through the lowering of room temperature is serious. You get roof drip, and this *may damage fabrics in the loom.*

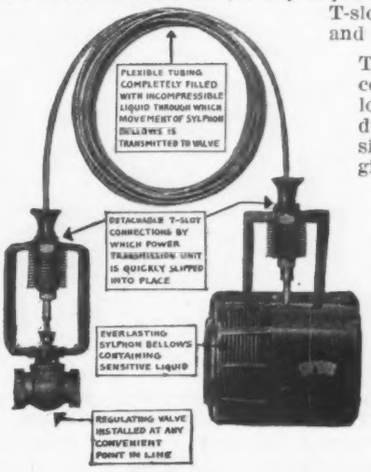
The Sylphon No. 11 REGITHERM

Is the Most Dependable of All Room Temperature Controls

It saves fuel bills, and prevents your humidifying system from losing efficiency through fluctuating temperatures.

The No. 11 Sylphon Regitherm is a self-contained instrument which operates automatically and solely from temperature changes in the surrounding air. It has no delicate or complicated auxiliaries, is securely mounted on any suitable column, about five feet above the floor, where air circulation is good.

The valve is quickly installed in the steam line to radiators and the transmission tube (of any required length) is connected by T-slot Connections to the valve and to the Regitherm.


FLEXIBLE TUBING COMPLETELY FILLED WITH INCOMPRESSIBLE LIQUID THROUGH WHICH MOVEMENT OF SYLPHON BELLOWS IS TRANSMITTED TO VALVE
DETACHABLE T-SLOT CONNECTIONS BY WHICH POWER TRANSMISSION UNIT IS QUICKLY SLIPPED INTO PLACE
EVERLASTING SYLPHON BELLOWS CONTAINING SENSITIVE LIQUID
REGULATING VALVE INSTALLED AT ANY CONVENIENT POINT IN LINE

The Sylphon Regitherm contains the Sylphon Bellows—the most sensitive, durable and flexible expansion element known to engineering science.

Owners, Managers, Agents, Superintendents and Overseers should know the full story of this remarkable Sylphon Instrument that is meeting temperature control requirements in hundreds of mills.

Send for Bulletin CR-102

FULTON SYLPHON CO.
KNOXVILLE, TENN., U.S.A.

Representatives in all Principal Cities in U. S. A.—European Representatives, Crosby Valve & Eng. Company, Ltd., 41-2 Foley St., London, W. 1, England—Canadian Representatives, Darling Bros., Ltd., 140 Prince St., Montreal, Que., Canada.

CLOTHS

ROLLER
CLEARER
SLASHER

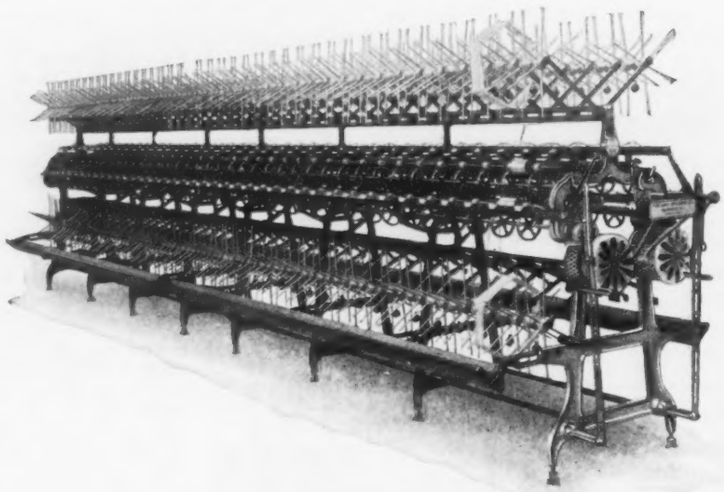
Philadelphia Felt quality is not an accident. It is the result of experience, unusual skill, good raw materials, and a well informed idea of what felts for mechanical purposes should be.
You will agree with us when you see the uniformity of surface, the proper cushion—and other excellent features.

Our Southern Sales Manager, Clarence B. Seal, will be pleased to assist you on your felt problems. Address inquiries to Philadelphia.

PHILADELPHIA FELT COMPANY

F. LEE PUTNEY, *Treas.*

FRANKFORD, PHILADELPHIA, PENNA.



Economy and Strength are built into These Winders

BEC

ECONOMY in floor space—the same number of spindles in about one-half the space required for single deck winders . . . Economy in operation — oil-less spindle bearings and shafts make for higher spindle speed and increased production; eliminate "oil spot seconds" and unevenly wound spools . . . . Strength in construction—steel pipe frame—rigid, perfectly aligned. Patented rigid traverse motion . . . . Strength through improved organization — combined factory facilities and technical staffs of the two former companies now available in one organization . . . . Economy and Strength . . . . plus!

ITS TRADE MARK SIPP

Sipp-Eastwood Double Deck Winders

SIPP-EASTWOOD CORPORATION

Manufacturers of Warpers, Winders and Quillers

Keen and Summer Streets,
Paterson, New Jersey

REPRESENTATIVES:

NEW ENGLAND
Joseph Barnes, New Bedford, Mass.

SOUTH
Carolina Specialty Co.,
Charlotte, N. C.

ENGLAND
Textile Accessories, Ltd.,
Manchester, England

different points, which is tedious and inconvenient. An apparatus such as I described in my article can be very easily checked at any time, since it is simply a scale to weigh the changes in the standard sample of cotton, due to moisture variations. Its accuracy can be correctly verified by removing the cotton sample and hanging known weights on the hook. If out of adjustment, it can be readily readjusted until it will weigh properly. Knowing that it is accurate, the standard sample or element of cotton which has been on the instrument may be compared with a new element known to be of proper weight, and if the old element has picked up enough dust to cause it to vary appreciably in weight from the new one, it can be discarded and the new one installed. In this way any one using an instrument of this construction can be quite sure of the accuracy of his results. It is just as important to have confidence in the accuracy of the equipment as in the soundness of the principle involved, and my purpose in writing this article for COTTON was to lay before the trade this simpler and better method of accurately accomplishing what so many mills had unfortunately found could not be simply and accurately done with the ordinary instruments for determining relative humidity.

I appreciate the opportunity that your contributor has given to discuss this point at some greater length, and hope that this letter may be the means of possibly clarifying this question in the minds of other mill men.

A. P. ALDRICH, JR.

Another Lay-out for 70s.

EDITOR COTTON:

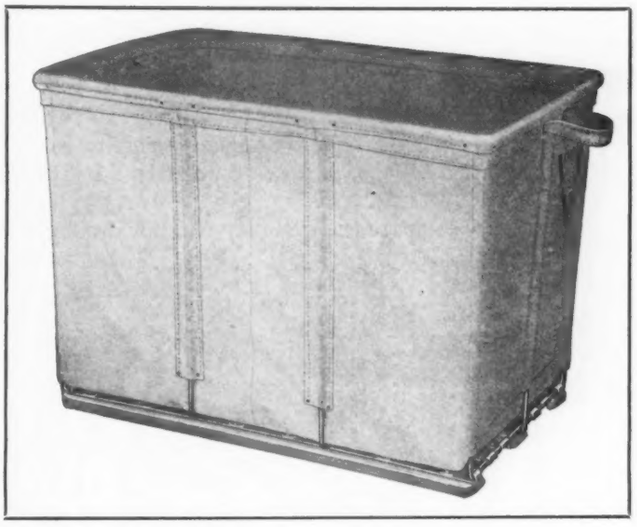
In the August, 1929, issue, "CONTRIBUTOR No. 4568" gives his suggestion of a lay-out for 70s yarn, which he considers an improvement over the lay-out given by "CONTRIBUTOR No. 4101" in the April issue.

I will explain my own lay-out—a lay-out which I have adopted after making many tests for both cleanliness and breaking strength. To begin with, and for convenience, I will give the layouts of the two former contributors along with my own, but for the present will omit the drafts, which I will compare later.

Machine	Contributor No. 4101		Contributor No. 4568		My own	
Picker	10.5	ounce	10.5	ounce	12	ounce
Card	33	grain	43.6	grain	42	grain
Sliver Lap	380	"	450	"	480	"
Ribbon Lap	380	"	450	"	480	"
Comber	49	"	45	"	52	"
First drawing	55	"	45	"	56	"
Second drawing	60	"	45	"	60	"
Slubber	.50	hank	.60	hank	.55	hank
Intermediate	1.25	"	1.40	"	1.20	"
Fly frame	4.50	"	4.00	"	3.80	"
Jacks	14.00	"	13.00	"	13.50	"
Spinning	70s		70s		70s	

In commenting upon the pickers and cards, I do not agree with "CONTRIBUTOR No. 4568" that short card drafts are best, as I have found in my experience that I get better carding with a heavier lap and a light feed. Of course this is assuming that the actual production in pounds is the same.

I will now explain why I go heavier on my drawing, and then have to use longer drafts on the roving frames. In the first place, we all know that we are now forced to use shorter cotton. This makes a weak-



PROOF AGAINST

•sagging
•warping
•and bending

ROCKWEAVE
baskets and trucks

Rockweave canvas products are built for the hardest use. They have frames of round, specially tempered spring steel, and resilient, galvanized strap steel bands, riveted both crosswise and lengthwise to the steel frame—which form the most protective bottom yet devised.

Triumph Duck is used for all coverings. It is made in our own mills, and is much harder wearing, weight for weight. The top rims are bound with chrome leather. Basket shoes can be replaced if they become worn. The trucks are made of selected clear oak and maple. The workmanship in each case is on a par with material . . . fully guaranteed against flaws.

Rockweave canvas products are in a class by themselves, but our facilities enable us to price them right in line with the market. Standard sizes are ready for immediate shipment. We can also make special sizes for your requirements on short notice, and at reasonable prices. Our salesmen can supply full information and take your order. Or you can write direct.

ROCKWEAVE MILLS
Division Callaway Mills, LaGrange, Georgia

er sliver, so by making it heavier on the drawing, I find that I get less stretch, less breakage, and can also run my drawing at a reduced speed, which is also an advantage when using short stapled cotton.

I wish to state that this lay-out can be used with good results on both filling and warp yarns by using 1¼-inch to 1 5/16-inch cotton for warp and 1⅛-inch to 1 3/16-inch cotton for filling.

I will now compare the three lay-outs for drafts.

Machine	Contributor No. 4101	Contributor No. 4568	My own
Picker	4.38		4.00
Card	139.20	100	125
Sliver Lap	1.74	1.93	1.75
Ribbon Lap	4.00	4.00	4.00
Comber	51.49	50.00	60.50
First drawing	5.34	6.00	5.57
Second drawing	5.50	6.00	5.60
Slubber	3.60	3.24	3.96
Intermediates	5.00	4.66	4.36
Fly Frame	7.20	5.71	6.33
Jacks	6.20	6.50	7.10
Spinning	10.00	10.77	10.37

I hope this article will prove to be a help to some of the readers, and, if tried, I believe it will, for I get very good results.

It might be of interest to some to know that at times our mule spinner spins 90s out of the same roving, making good even yarn, and without the costly trouble of changing the roving in the creel.

J. U. H. B. (MASS.)

More About Preventing Fly Waste.

EDITOR COTTON:

In reading the "HOW OTHER MEN MANAGE" department, I came across some questions on carding, from "B. M. (Mass.)" concerning which I may be able to give some helpful suggestions.

The first question asked what causes an excess amount of waste to fly out between the cylinder and the side arch of the card. This is a very interesting question, and I have seen one place where it was a nuisance, so to speak. We tried several things, and the two which helped us most were as follows: We cased up around the card at the floor, eliminating the slight draft which was passing through there; and we examined the bearings on the cylinder shaft to see whether they were worn to any extent. If they seemed to be worn, we pulled open the cylinder door, and tried to get the same distance between the cylinder and the arches on each side, loosening up the bearing bolts and turning them over a few times to see if they would stay. If necessary, we would hammer the bearing up to the right place, this taking about three of four licks with a common machine hammer. This also stopped friction that oftentimes is prevalent while the card is running, on the arches.

The second question wanted to know what causes too large an amount of fly waste and droppings through the mote knives on a card, the waste dropping down in little bunches. In connection with this question, I noticed in the June number that on page 911, in the account of the Henderson meeting where carding and spinning were discussed, C. S. Tatum of Raleigh, N. C., was reported as advising not to set a feed plate very close. However, we are running cotton that staples 1 3/32-inch, with a lot of neps in it, and we were having this trouble of waste dropping down through the mote knives. My father, who is well versed in carding, suggested that we set up closer on the feed plate. We were setting to a 10 gauge and we came up closer to a 7 gauge and this showed some improvement, but not as much as we wanted. So then we had the mote knives re-dressed or milled down to a smooth edge, and with these two changes we have been getting very satisfactory results since. As long as the mote knives take out motes, the better I like it. We have been making some tests lately in regard to fly and find that we have an average around 1.037 per cent. Occasionally we go to two per cent fly, but this is very seldom.

J. R. (GA.)

Should a Man Wait for Promotion?

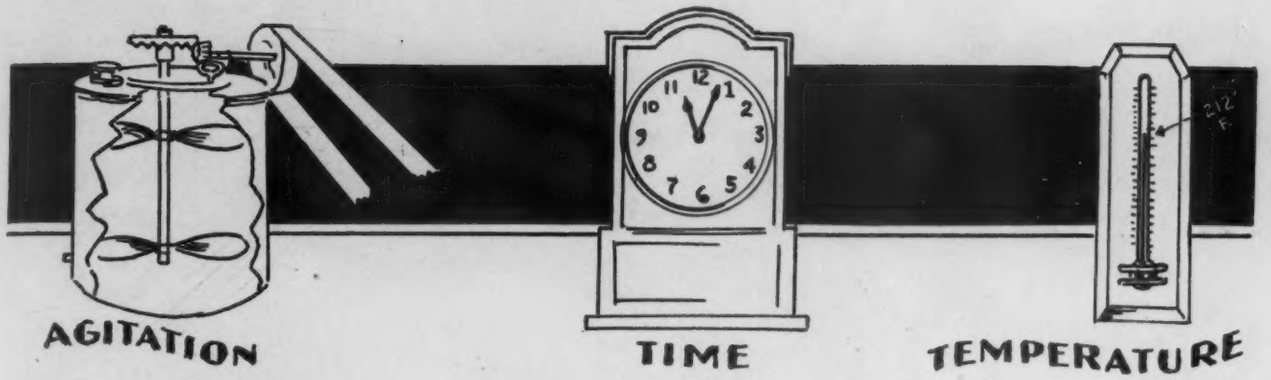
EDITOR COTTON:

Does it pay for an overseer who is getting along in years to stick to the company he is working for and wait for the promotion that may never come—or is it better for him to step out and seek what he desires? I have had that question put to me a number of times in the last few years, and with your permission I will try to give the readers of COTTON my ideas concerning it:

First, if you are an overseer and are qualified for a superintendent's position, and if you are working for a company which has a number of mills, and if they promote their men, then let your superintendent know of your desire. Then, when a position of this kind comes open at one of the company's mills, it will be his duty to do everything in his power to get you the job—that is, if you are qualified, and he will be in a position to know after working along with you for several years. So, if you are with a company of this kind, stick with them, and sooner or later you will get the promotion that is due you.

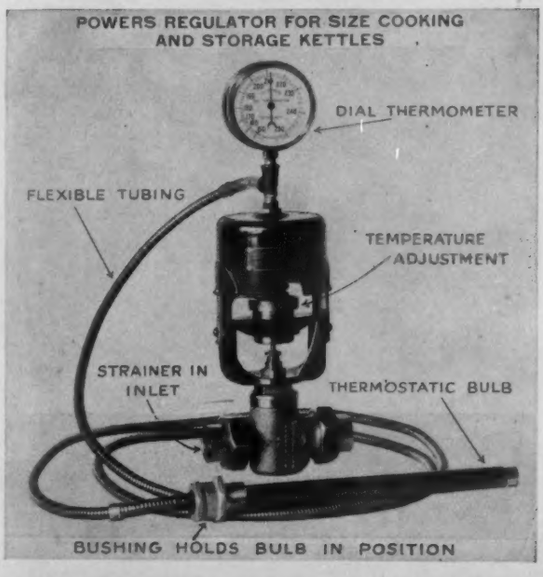
But, if on the other hand you are getting along in years and working for a company which has only one mill, and you desire a superintendent's place, then again make your desires known to your superintendent. If you have made him a good loyal overseer, I am sure he will help you, and I am sure that you will find what you desire. There are a lot of good overseers in the mills today who would make good superintendents, but who are just whiling their time away rather than let their wants be known. And there are a lot of mills which need men of this kind for superintendents just as much as these men need the jobs. If you are an overseer and you are qualified for a superintendent's place, and if you are not taking some steps to get it, you are doing the men under you an injustice, for they have probably done everything they could to work you up so that it might give them a chance at something better. So, if the promotion does not seek you, step out and seek it, and don't be long about starting, for it matters not what your age is, if you are already on the job and showing good results. But you will not find many mills which will put on a superintendent with one foot in the grave and the other on the edge. Think it over.

J. T. D. (MISS.)



—and the Greatest of these is

in making up a batch of size



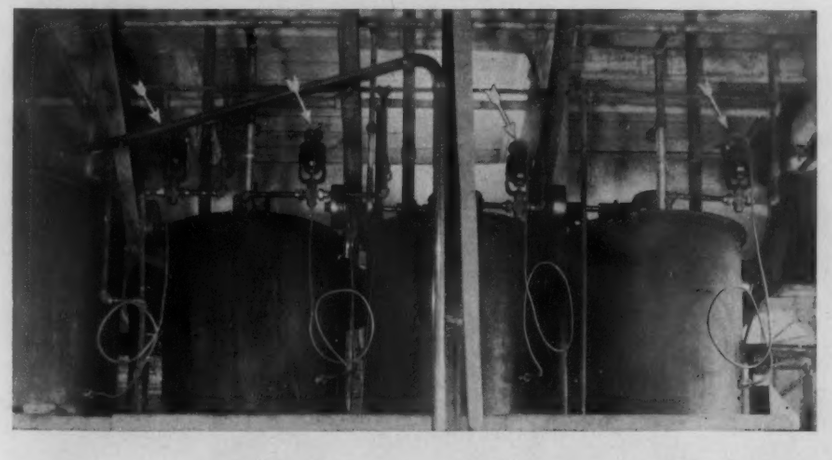
"ALL textile sizing solutions are at their maximum *viscosity* in from 15 to 60 minutes after reaching the boiling temperature." (Walter A. Niviling, Consulting Chemist.)

Continued boiling and agitation lowers the viscosity. The viscous quality of size should be kept high until it is ready for use in the size box. The higher the viscosity of the size, the greater the amount that clings to the yarn.

Stop Overheating of Size
Reduce Steam Losses

Eliminate the errors of hand control in size cooking with the mechanical accuracy of a Powers Automatic Temperature Regulator. By allowing only the right amount of steam to flow to the size and keeping it at the right temperature (212° F.) Powers Regulators quickly pay back their cost and yield a big return on a comparatively small investment.

Note: By using Powers Regulators the kettle lid can be closed during cooking.



Write for Book—which shows and fully describes the money saving advantages of Powers Regulators for the Slasher Room.

THE POWERS REGULATOR COMPANY

35 Years of Specialization in Automatic Temperature Control

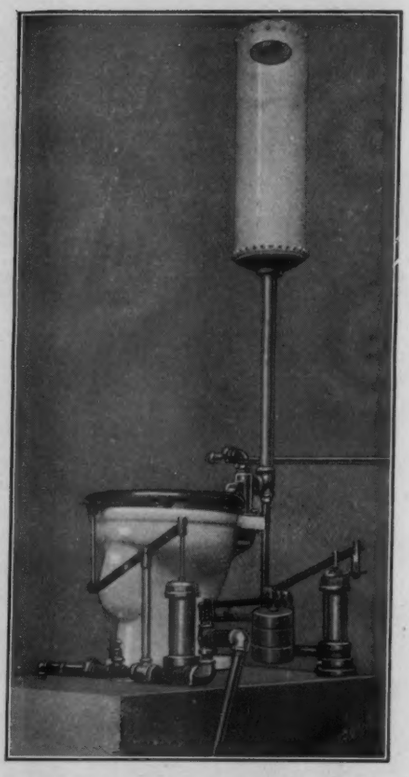
CHICAGO: 2739 Greenview Avenue · NEW YORK: 137 East 46th Street

ATLANTA BOSTON CHARLOTTE, N. C. GREENVILLE, S. C. PHILADELPHIA PROVIDENCE

Offices in 32 Other Cities

For factories where closets must stand hard wear...

THE VOGEL SELFLUSH NUMBER TEN SEAT-ACTION CLOSET



The VOGEL SELFLUSH Number Ten never gets out of order and will stand up indefinitely under the hardest kind of use—*and even abuse.*

We have proved this by tests in our own factory where we opened and closed the valve of a Number Ten 150,000 times without stopping and still it showed no sign of wear. At present the closet is undergoing an endurance test which started July 16, 1929, and will last indefinitely.

FOR YOUR INFORMATION

We are testing by endurance the Vogel Selflush Number Ten Closet.

This closet, under actual operating conditions, has flushed 86,000 times, without requiring the renewing of even a washer. The test continues.

Some of the reasons for such long-wearing qualities are—All moving parts are made of high tension bronze — the tank is heavy galvanized iron—the seat is made to our own specifications — and the bowl is two-fired vitreous china finished in a high, hard glaze.

The Vogel Number Ten can be supplied with open front seat —also seat of indestructible composition which allows the outfit to be washed down with live steam.

Think these facts over. You want to install closets in your factory which will stand all kinds of hard use. They must be easy to work around and never get out of order... Install Vogel Number Tens.

JOSEPH A. VOGEL COMPANY

WILMINGTON, DEL. ST. LOUIS, MO.

VOGEL PATENTED *Products*

A New Method of Conditioning Yarn

A NEW PROCESS for conditioning yarns and fabrics has recently been introduced in the United States and Canada, after extensive use in foreign countries. This new process is based on the combination of the use of a rapidly penetrating, strongly protected solution and a mechanical method of application, which regulates to a definite degree the percentage of moisture applied. The equipment is manufactured by Hygrolit, Incorporated, Kearny, N. J., and Fred L. Bryant, Masonic Temple Building, Greenville, S. C., is the southern representative.

The process consists of a machine designed as a slat conveyor, on which the bobbins or other yarn packages are dumped automatically, the bobbins being sprayed with a special solution as they pass over the moving conveyors. A view of the machine is shown in the illustration. A spreading attachment on the machine distributes the bobbin evenly over the moving conveyor, and the liquid is sprayed in positively controlled quantities, it is stated. There are four sets of

The slat conveyors in Hygrolit Yarn Conditioning Machine.

sprays, and between each set the packages of yarn are turned over, for insuring moistening on all sides. The amount of moisture put into the yarn is positively controlled by setting the dials shown in the illustration. At the discharge end of the machine, the conditioned yarn is placed by the conveyors in a floor truck ready to go to the weave room, storage, etc. The time required for this operation is approximately 1½ minutes.

It is stated by the manufacturers that the solution used, known as Hygrolit, was developed following lengthy experiments to obtain definite action of penetration and at the same time possess antiseptic qualities to give protection againt damage to the yarn. It is stated that it will prevent mildew up to 12 per cent moisture for cotton yarn, and that it does not affect yarn for such after-processes as dyeing, bleaching or mercerizing, when applied before or after these processes. The solution, according to the manufacturers, has no damaging effect on the bobbins, and no change in the type of bobbins used is required. It is stated that the hygroscopic properties of yarn fibers are increased by this solution to such an extent that complete moisture of bobbins, cops, cones, tubes, etc., is obtained immediately.

The device for regulating the amount of moisture applied, which may be varied from one per cent to 21 per cent, can be easily adjusted to meet individual requirements, it is pointed out. The Hygrolit solution is mixed one gallon to 99 gallons of water. The power required to drive the machine is approximately 1½ h. p., and it is only necessary to operate the machine as required.

The solution is stored in a 250-gallon tank and flows by gravity to the spraying apparatus. The excess solution is collected in a pan underneath the machine and is pumped back into the storage tank for continuous use. The spray can be regulated from a mist to a heavy precipitation, depending upon the size of the yarn package and the percentage of moisture desired. The capacity of a standard machine is 30,000 pounds to 40,000 pounds of yarn in ten hours when operated continuously. It is stated that a smaller machine of 5,000 to 7,000 pounds capacity is now being produced. It is explained that this equipment may be conveniently located in the mill, with a saving of floor space, time and labor, as well as little difficulty in relocating the machine if desired.

Square D Company Adds To Sales Organization.

An announcement of promotions and an addition to its nation-wide sales organization was recently made by the Square D Company.

J. J. Mitchell, previously branch sales manager in Cleveland, Ohio, one of Square D's most expert panelboard men, has been transferred to the general offices in Detroit and placed in charge of all of the company's panelboard sales.

Stepping into Mr. Mitchell's shoes and assuming the position of Cleveland branch sales manager, is M. W. Parmalee, previously Square D sales representative in Cleveland.

The addition to the Square D sales organization is R. C. Thompson, formerly of the Moock Electric Supply Co., Canton, Ohio, who succeeds Mr. Parmalee as sales representative in Cleveland.

Bradford Hodges Takes on Additional Lines.

Bradford Hodges, with offices at 161 Spring Street, N. W., Atlanta, Ga., has added the following lines which he will handle as a manufacturers' agent, in addition to the Chicago Belting Company account: Cellugraph Engineering Company, Saugus, Mass.; Bancroft Textile Strapping Company, Boston, Mass.; Textile Patent and Process Company, Boston, Mass.; Spaulding Fibre Co.; Rochester, N. H.; Walter L. Parker Company, Lowell, Mass.; and Litchfield Shuttle Company, Southbridge, Mass.

Carrier Incorporates in Texas.

The Carrier Engineering Corp., of Newark, N. J., has announced the opening of a permanent engineering and sales office and shop at 2706 Commerce Street, Dallas, Texas. It is stated that ready acceptance and adoption of air conditioning on the part of the Southwest made it advisable for the Carrier company to incorporate in the state of Texas. Thos. M. Cunningham is manager of the new office.

Heddle-wise
means
Profit-wise!
The Superintendents and Boss Weavers of the "Prosperous Mills" are "Wise" to the Use of the Proper and Best Heddles, Reeds, etc. for the Different Kinds of Materials being Woven. That's the Reason they are such Staunch Supporters of the Flat Steel Heddles, Reeds, Frames, etc. Manufactured by the
Steel Heddle Mfg. Co.
2100 W. ALLEGHENY AVE. PHILADELPHIA, PA.
- SOUTHERN PLANT -
631 E. McBEE AVE. GREENVILLE, S.C.
- NEW ENGLAND OFF. -
49 FRANKLIN ST. PROVIDENCE, R.I.
- FOREIGN OFFICES -
HUDDERSFIELD, ENG.
SHANGHAI, CHINA.
Send for Our Valuable Hand Book on Loom Reeds — It's Free

MAXIMUM

CLEANING POWER AND LONG LIFE

Textile brushes that give maximum cleaning service depend upon three important factors: The quality of the bristles, the way they are set, and the design of the brush.

That only the best of material goes into the Gastonia Line, that they are built by experts, that only those designs which have proved preferable are used, has caused Gastonia to become a favorite of leading textile mills.

Write for prices and information.

GASTONIA BRUSH COMPANY
GASTONIA, NORTH CAROLINA

MICHAEL & BIVENS INC.,

Electrical Engineers and Contractors
Textile and Municipal Plants
Expert Motor and Transformer Rewinding
GASTONIA, N. C.

FERGUSON GEAR CO.

CUT GEARS CHAIN DRIVES
BEVEL SPUR SPIRAL WORM SPROCKETS
RAWHIDE BAKELITE AND HARDENED STEEL PINIONS
Member American Gear Manufacturers Association
GASTONIA, NORTH CAROLINA

BARKLEY MACHINE WORKS

MANUFACTURERS OF TEXTILE MACHINERY PARTS.
Cut Gears—Cast Tooth Gears.
Parts for Kitson Pickers, Nasmith Combers, Whitin Combers. General Textile Repairs.
GASTONIA, NORTH CAROLINA

IDEAL MACHINE SHOP

Repair Headquarters for
STEEL ROLLS — SPINDLES — FLYERS
We make a specialty of
METALLIC DRAWING ROLLS
and also do
Overhauling, Moving and Erecting
BESSEMER CITY, N. C.

Sizing Methods and Ingredients.

(*Continued from Page* 122.)

form a film over the yarn. These chemicals more or less change starch to a different product, rather like gum and these are the elements of sizing compounds which are usually held secret by the manufacturer and it is along this line that so much of his research work is done.

Weighting Materials.

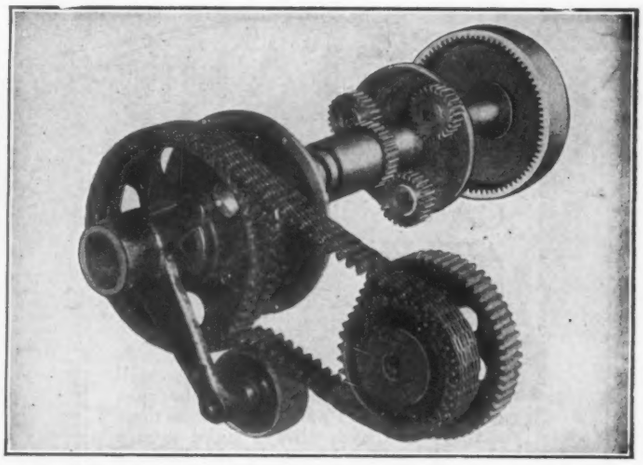
Before finishing the discussion, I might mention a group of materials known as weighting materials. These are not so prominent in this country as they are abroad. One of the main ingredients in this group is China clay, but we also have materials such as barium sulphate, better known as mineral white, and calcium sulphate, better known as gypsum, chalk or talcum. I do not believe that more than about twenty per cent of added weight can be put on yarn and made to stick without the use of some weighting material—where figures indicate over twenty per cent is being added, it is either pasted on and it is certain to knock off or else is due to an excessive moisture content.

Analyzing Size.

The next subject we would like to discuss is that of size analysis. In my opinion the most misleading thing that could occur is to judge a compound by its analysis. A chemist may be very accurate but the actual ingredients that go into the completed size are generally changed. The only advantage of analysis, in my mind, is that it enables the mill man to have some check on his subsequent shipments and to ascertain if the same proportions are being used.

Slasher Room Equipment.

I will next discuss the subject of slasher room equipment. The cooking kettles should be uniform, and the size of the kettles should be in proportion to the amount of siez used per hour or per day. I have been in some mills where they use one large kettle, that contains more than their requirements, and the results were that they were getting a weakening down of the mixture. We have made quite a few tests along this line, and have tested the strength of the size solution from the beginning of the kettle to the end, and have found that this will vary as much as one per cent. It is our suggestion that you do not have a kettle of size last much more than two hours. With regard to the circulating system, if you use one, it should be so designed that you use a pump that is slow-moving. A centrifugal pump will beat the size too much. Whether or not you use a circulating system depends upon what you are doing. Sometimes it is all right and at other times the constant level system is the best to use. There are various methods of using this system, one, a simple method, being to use a float which operates a quick-opening valve, and when the float goes down it allows size to go in, and when it goes up it closes the aperture. Undoubtedly, a more refined system is the



Excels in:

—simplified fool - proof construction
—ease of installation
—power economy

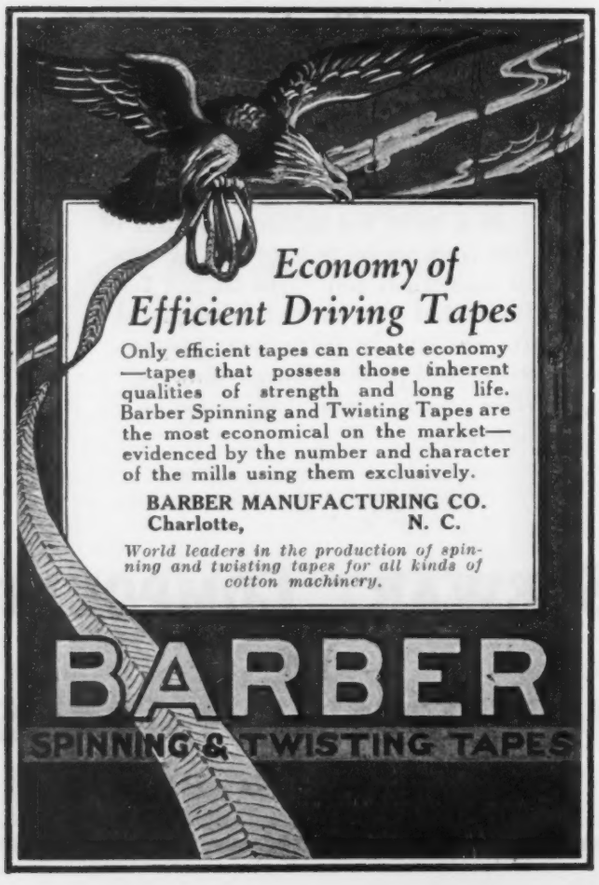
To fully acquaint you with the merits of the Stewart Compound for Roving Frames with Chain Drive the sure way is a try-out on the job . . . . Of course many big textile mills are already sold on this compound, realizing its ability to save 10% of power required to drive frame, to reduce 50% of load on cone shaft, to effect positive, direct mechanical operation.

This means that a try-out is really to your advantage. Such installations have led to the adoption of the Stewart by many mills. Its cost is moderate, too. But its big features that you should learn about are perfect performance, power saving and production advantages. Write or wire today for an installation test.

PRECISION GEAR & MACHINE CO., INC.
701 EAST FRANKLIN AVE.,
GASTONIA, N. C.

STEWART COMPOUND
for
ROVING FRAMES
WITH CHAIN DRIVE

GARLAND
GARLAND Harnesses
ARE BEST
FOR
MACHINE Drawing
Our harnesses are especially well adapted for machine drawing because of the alignment of the eyes and their shape. The eyes always stand square throughout the length of the harness and they are of just the right length and opened just enough to produce the best possible results in machine drawing. Our harnesses are as near perfect for machine drawing as it is possible for a harness to be made.
G
TRADE MARK
GARLAND MFG. CO.
SACO, MAINE


Economy of
Efficient Driving Tapes
Only efficient tapes can create economy —tapes that possess those inherent qualities of strength and long life. Barber Spinning and Twisting Tapes are the most economical on the market— evidenced by the number and character of the mills using them exclusively.
BARBER MANUFACTURING CO.
Charlotte, N. C.
World leaders in the production of spinning and twisting tapes for all kinds of cotton machinery.
BARBER
SPINNING & TWISTING TAPES

use of temperature control apparatus operated from a bulb, etc.

Weighing and Measuring Starch.

I might also discuss the matter of weighing or measuring starch. Starch occurs sometime in granular form and sometimes in powder form and sometimes as a mixture of both. We therefore feel that weighing starch is a much more accurate method than measuring it. Our recommendation is to use containers that you can get on the scales all at one time. Three roving cans, for example, are a good thing to use if you can. There you reduce the chance of making errors, which would be increased by the use of seven or eight smaller containers where you might make more errors, and might sometimes leave a bucketful out, etc.

Size kettles should be always covered with asbestos, because this will pay for itself in six months in the saving of steam alone besides giving much more uniform results.

It is also a known fact that any sizing material which is set over is inferior to fresh size. You cannot get the same smooth film from material that has set up.

Discussion on Mr. Woolley's Remarks.

There was some interesting discussion following Mr. Woolley's remarks. Referring to the type of pump used, Mr. Wikle asked why it was injurious to use a centrifugal pump and Mr. Woolley replied that it has a tendency to beat the size and wear it down. On the other hand, Mr. Wikle replied that he had trouble with slow-moving pumps, and put in centrifugal pumps and remedied this. Mr. Woolley stated that in the engineering field there is what is known as good engineering practice, which possibly could not be explained according to exact theories, but that their own experience and practice had shown that a centrifugal pump will beat the size and wear it down more than will a slow-moving or rotary pump.

Mr. Wikle asked if benzoic acid evaporates and Mr. Woolley pointed out that tests would show that benzoic acid is carried out by the steam, that you could evaporate formaldehyde, for example, with dry heat, but that this does not occur so readily with benzoic acid.

L. R. Manning suggested the use of turpentine, in case any mills were bothered with rats eating the cloth, pointing out that it will stay in the cloth and prevent this trouble.

Mr. Wikle asked Mr. Woolley's opinion as to how long size would be kept before using with the use of a proper germicide. Mr. Woolley said they had recently made some tests of their product which had been kept under proper conditions for three years, and that it was satisfactory for use. He pointed out that most compounds are emulsions and that unless emulsions are subjected to extreme heat or extreme cold, they will last indefinitely. He said that it should be a safe practice to buy as much as seven or eight months' supply of sizing compound.

Mr. Manning asked the speaker's opinion as to

mixing thin and thick boiling starch together. Mr. Woolley indicated that a mixture of thin and thick boiling starch would be okay but unless the purpose demanded it, he would use either alone.

Mr. Woolley was asked his opinion with reference to the practice referred to at the Friday evening session of cooking the starch before adding the compound. He said that in his opinion it was more satisfactory to do the cooking of the ingredients all together.

Someone asked the difference between thick and thin boiling starch and Mr. Woolley replied that anything above 20 fluidity would be considered thin boiling starch. He pointed out here the discrepancies that exist, on account of the human element, between different methods of determining the fluidity of starches. He pointed out that one company's 20 fruidity might not be the same as another company's 20 fluidity. However, he said, any competent analyst would always give comparable results, on the basis of his own method. For instance: if a mill submitted samples of starch to any one chemist, he could give the relative fluidity, although the actual figures presented might not compare exactly with the figures from another analyst. This concluded the discussion of this subject.

Southern Textile Association.

(*Continued from Page* 119.)

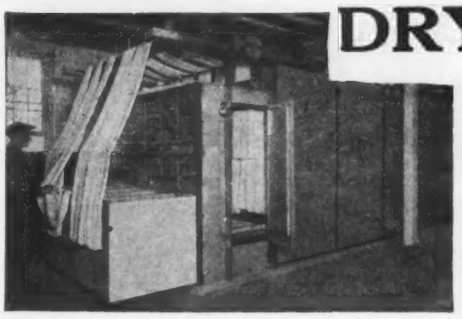
"The Southern Textile Association is composed of men who are representatives for upwards of 300,000 people who are employed in the textile industry of the South, and may God grant that our actions may be inspired and that we may be such an influence that our leadership will inspire those associated with us to greater spiritual, social and industrial accomplishment.

"I am heartily in favor of any measure which will place our industry on a footing that will enable it to support those connected with it in a more substantial manner. However, it is beyond me to see where any improvement in conditions can be brought about from the different panaceas which are being offered to our people by outsiders at this time. What we need most is a better understanding of the conditions which are confronting us, confidence, cooperation and to be let alone, while the two parties most interested work out their mutual problems.

"Those who would preach any doctrine or principle at this time which will impede our progress along the lines of scientific manufacturing are striking a blow from which it will take years for our people and industry to recover. And anyone who through indifference or any other reason, refuses an opportunity to progress along these lines, contributes just as much to retarding our forward movement.

"And, gentlemen, I must say frankly that we can find many in our own ranks who are guilty of this latter offense. I do not mean to imply that this is intentional, but comes because we are not inclined to adjust ourselves to the new order of things. And, as individuals and as component parts of our great industry, we will be swept aside by the waves of other men's progress, unless we adopt our ideas and methods to

"HURRICANE" DRYERS



for All Textiles

LOOP DRYERS. Plush, Crepe, and many kinds of Piece Goods are best dried, without tension, by currents of warm air in "HURRICANE" Loop Dryers which are also adapted for Toweling and Underwear Fabric.

AUTOMATIC YARN DRYERS AND CONDITIONERS. Continuous handling of the yarn with reduced air temperatures assures a *quality* product and *economy* in operation. Dryers can be fitted with Automatic Control of Temperature, and with Cooling and Conditioning sections.

STOCK DRYERS. For Cotton, Wool, Noils, and Rags, —with Conveying Aprons of various widths, in any required capacity.

Steam and Electrically Heated Hosiery Drying Forms

The Philadelphia Drying Machinery Co.

3351 Stokley St., Philadelphia, Pa.

HURRICANE *Ideal Drying Every Day*

REG. U.S. PAT. OFF.

Southern Agents:

Carolina Specialty Co., Charlotte, N. C.

89

LAMBETH

spinning & twisting TAPES

PLAY SAFE!

The reason why the largest mills buy Lambeth Spinning and Twisting Tapes is ECONOMY.

Tests have proven Lambeth Tapes wear longer and run smoother. At prices half again as much, Lambeth Tapes would still be most economical.

Look at Lambeth Tapes. The eye can even tell the difference. Let us quote you on your requirements and send sample.

LAMBETH ROPE CORPORATION

CHARLOTTE · N · C

ALL STEEL
ECONOMY
FIRE PROOF
BALING PRESSES
ALL SIZES FOR ALL PURPOSES
LARGEST LINE BUILT IN U.S.A.
ECONOMY BALER CO., DEPT. C, ANN ARBOR, MICH., U.S.A.

STODGHILL & COMPANY
530-532-534 Marietta St. Atlanta, Ga.

"The Size That Satisfies"

Sizing Compound "V" — TALLOW, GLYCERINE, GUMS, DEXTRINE, PRESERVATIVE, WATER

Contains no Chlorides, no Mineral Salts, and no Mineral Oil.

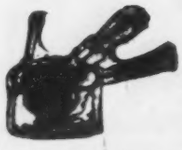
A Compound that has never given any trouble at the finishing plant. Will give a good increase in tensile strength. This Compound and our Service will give the feel and weight desired.

CLINTON STARCHES
FOR ALL TEXTILE PURPOSES
Manufactured by
CLINTON CORN SYRUP REFINING COMPANY
CLINTON, IOWA.
QUALITY SERVICE

Bradley Stencil Machine

The Bradley Stencil Machine makes stencils in half a minute at reduced cost of 1-10c each. Write for catalogue and price list.

In universal use by thousands of manufacturers and shippers.



Oil Paper, Stencil Paper and Inks. Bradley Ball Stencil Pot uses Liquid Ink for marking and stenciling. Price 60c or $6.00 per doz. Manufacturers of Oil Stencil Papers.

Write for Prices and Samples

A. J. BRADLEY MFG. CO.
99 Beekman Street NEW YORK

PATENTS
PAUL B. EATON
Registered Patent Attorney, 218 Johnston Building
CHARLOTTE, NORTH CAROLINA
A former member of the Examining Corps
United States Patent Office
Also: 314 McLACHLEN BLDG., WASHINGTON, D. C.

Prevent Glare and Heat by Coating your Windows with
SKYCO NoGlare
Write for free sample.
THE SKYBRYTE COMPANY
1919 East 19th St. Cleveland, Ohio

meet the new conditions."

Walter C. Taylor, of Charlotte, was introduced as the new secretary-treasurer of the Association, and of The Arkwrights, Inc., succeeding Joseph C. Cobb, resigned. A telegram from Thomas F. McMahon, president of the United Textile Workers of America, suggesting a conference with the Association with regard to hours of labor and wages, was read, and a reply sent explaining that the Association is purely educational and technical, and does not cover hours of labor and wages in its proceedings.

The Value of New Equipment.

(*Continued from Page* 118.)

be secured with it. We recently scrapped considerable old spinning in one of our plants, replacing it with new equipment. By putting in longer frames we were able to operate several thousand additional spindles without additional labor cost. With the increased production possible from the new machines, we have materially reduced our spinning cost.

Since so much has been said about long draft spinning during the past three or four years, no discussion of new machinery would be complete without giving it consideration. It is interesting to note that some of the machinery builders who did not seem to be particularly interested in long draft three years ago, are now advocating its use. Many thousands of spindles of long draft have already been installed, and many of those using it are well pleased with the results they are getting.

We have at Greenwood about 9,000 spindles of long draft spinning that were installed about six months ago. This new equipment is on warp frames making 30s from 4.25-hank roving with a draft of 15.35. The yarn from these frames is about ten per cent stronger than the same number of yarn from our old frames made from 6.00-hank roving wtih a draft of 10.77.

Some additional cleaning is required on long draft spinning, but after the spinners become accustomed to it, they can tend the unusual number of spindles. There is a material saving on labor cost in the card room where it is in use, and also a saving in power and in floor space.

About three years ago we installed the automatic spooling and warping, putting in four spoolers and warpers. These operatives earn about 25 per cent more than they did on the old machines. Our labor cost for this department was reduced about 40 per cent. While additional power is used to drive the machines, this is offset to some extent by releasing valuable floor space that was badly needed for other purposes.

After these machines were installed, a decided improvement was shown in the running of our weaving, and in the quality of cloth being woven. This enabled our weavers to run more looms with less effort on their part. As the result, we were able to cut out five weavers on each shift, increase the wages of those remaining, and at the same time reduce our weaving cost about five per cent.

Those who prefer keeping their warp spinning on the filling wind can certainly secure some of these ben-

Better Lubrication at *Less Cost* per month

See Those Oil Drops—

they should be in the bearing, not on the machine, the floor, the goods.

Wasted oil is a troublemaker for you—meaning another oiling soon—and frequently a stained product—with you to get the blame.

All unnecessary—just ask for

TRADE MARK REGISTERED IN
NON-FLUID OIL
UNITED STATES PATENT OFFICE

MODERN TEXTILE LUBRICANT

It *stays* in bearings—
keeping machines running smoothly—lessening the danger of tie ups for replacements—lasting longer—requiring fewer oilings—costing the mill less for lubricant—and removing the danger of oil spots on the product.

Write for testing sample and bulletin,
"Lubrication of Textile Machinery."
Southern Agent: Lewis W. Thomason, Charlotte, N. C.

NEW YORK & NEW JERSEY LUBRICANT CO.
MAIN OFFICE: *292 MADISON AVENUE, NEW YORK, N.Y.*
Warehouses:
CHICAGO, ILL. PROVIDENCE, R. I. ATLANTA, GA.
ST. LOUIS, MO. DETROIT, MICH. CHARLOTTE, N. C.
NEW ORLEANS, LA. SPARTANBURG, S. C. GREENVILLE, S. C.

Deliver More Sliver in Less Time

The use of Platt's Metallic Card Clothing for the carding of cotton is fully justifiable in the fact that it delivers from 1% to 3½% more sliver in LESS TIME.

Write for information.

PLATT'S
METALLIC CARD CLOTHING
AND SERRATED WIRES

PLATT FRERES,
BOULEVARD DE LYON, ROUBAIX, FRANCE
Platt's Metallic Card Clothing Co.
P. O. BOX 407, LEXINGTON, N. C.
J. W. & H. Platt, Byron Works, Bouverie Rd., Harrow, England
Other Continental Branches in ROUEN, GHENT, BALE, MULHOUSE, BARCELONA, TORINO, etc.

efits by replacing their old spoolers and warpers with high speed winders and warpers.

No radical change has been made in plain looms during the past few years, but we all know that improvements have been made on them that enabled us to produce better cloth than can be produced on thousands of the old looms that are running in our southern mills. We are now installing about 500 new looms in one of our plants, scrapping the old ones, and believe it will be a good investment for us.

In considering the value of replacing old machines with new, we must not lose sight of the fact that other equipment is needed if we are to secure the best results from our machinery, whether it be old or new. Textiles cannot be successfully manufactured in this section without means of artificial humidification. We have in the South many economic factors which have favored expanding the textile industry to these regions, but this could never have been done so successfully had not engineers developed the means of creating and controlling atmospheric conditions within the mills, regardless of outdoor weather.

In 1921, we installed a complete new humidifier system, putting in high duty heads and automatic controls. Appreciation of the benefit derived from the use of this equipment, and realizing the need of more humidity and closer control of it as our manufacturing conditions changed, we re-vamped the entire system last year, putting in additional heads and controls where they were needed. In my judgment, we have never invested any money in new equipment on which we have secured a better return.

Until comparatively recent years, the lighting system in most of our mills was looked upon as one of the necessary accessories of the plant. Practically any mill operator today, who has kept abreast of the mill practice, believes fundamentally in good illumination. Its benefits are derived from a variety of sources, ranging all the way from reduced accident frequency to improved quality and increased production.

E. A. Franks, superintendent, Dunean Mills, Greenville, S. C., also spoke briefly upon this subject. Following these addresses, there was a brief round table discussion as to specific points mentioned in the papers. A. H. Cottingham, general manager, Victor-Monaghan Company, Greenville, S. C., asked for figures as to the increased production secured by replacing old spinning with new.

Discussion on New Equipment.

"I have replaced all of my warp spinning with new tape-drive spinning," said W. W. Cobb, superintendent, Norris Cotton Mills, Cateechee, S. C. "We put in 8,640 spindles where we had 9,968, and have increased production about 20 per cent, running less hours. When we had the old spinning, I had to operate it extra hours to keep up with the weaving, and now we operate no extra hours at all." In response to questions, Mr. Cobb said that he uses practically the same kind of cotton, and that where on the old spinning he got around 102 r.p.m. on the front roll, he now gets 126 r.p.m. in the winter and 122 r.p.m. in the summer.

Mr. Brown asked what one thing on the new spinning was the greatest improvement. Mr. Cobb said there were three of them: wider gauge, tape drive, and individual motor drive. He said that in changing to the new spinning, he used the larger of two sizes of rings which had been used on the old spinning.

J. B. Harris stated that a man had told him that when this discussion developed, he was going to ask where the money was coming from to pay for it. In this connectoin, Mr. Harris said, "Those of us who continue in the manufacturing business are going to pay for some of this new equipment whether we buy it or not."

Mr. Cottingham next asked for experiences with the high speed winding and high speed warping system. J. Y. Jones, Newbery Cotton Mills, Newberry, S. C., stated that he had installed this system and had cut out ten operatives. He formerly used 15 spoolers and 20 warpers, and now has 10 winders and 6 warpers. He formerly had 30 spoolers and now has 25 winders, cutting out one warper hand, a creel hand, one man in the slasher room, and two yarn men, with a saving to the mill, a reduction in the waste of about six hundred to seven hundred pounds a week.

There was some discussion at this point by Mr. Stone and John W. Fox with reference to variable speed spinning frame motors, which, it was pointed out, have not yet been developed in this country to a satisfactory point.

Mr. Cottingham made the following statement which was made to him by a friend. He spoke as follows: "This man was telling me that he had to do some re-vamping in his plant, and went before his president and the directors and made the statement that if they would give him around a half million dollars and let him revamp the plant he would guarantee to save them two cents per pound within three years. They came back at him and asked if he could do that in three years, why not re-vamp the plant in one year. He promised that he would. This is a plant of around 70 or 80 thousand spindles, running day and night, and they allowed him this amount to re-vamp it, and he completed the job within a year as he had promised. He told me that since this re-vamping he had reduced the cost three cents a pound, so you see what new machinery will do. Of course we have plants where we could do the same thing, but where the half million dollars is coming from I do not know."

"One of my Greenville friends is going to re-vamp his plant, spending $350,000, and he has already figured out a saving of $20,000 a year by this re-arrangement and re-vamping. We have got to keep up to date, but fellows in our positions have to look to someone else for the money to do it with."

Marshall Dilling, superintendent, A. M. Smyre Manufacturing Company, Gastonia, N. C., was called upon for a statement with regard to one-process picking and said, "In regard to one-process picking, my friend Mr. Graves sold me the idea. I was rather skeptical about it at first, but we have had it in operation and it is giving us a saving of about 15 per cent on the investment, or rather earning that on the saving and in addition we get less power, less floor space and better work." This practically concluded the discussion, and the meeting was adjourned.

Model K

The Machine for producing the "SPIRAL KNIT"

QUALITY is a strong factor in the increasing popularity of the nude effect in service weights.

"Spiral Knit" stockings made on our Model K machine—300 and 320 needle—emphasize this important feature.

Established 1865

SCOTT & WILLIAMS

Incorporated

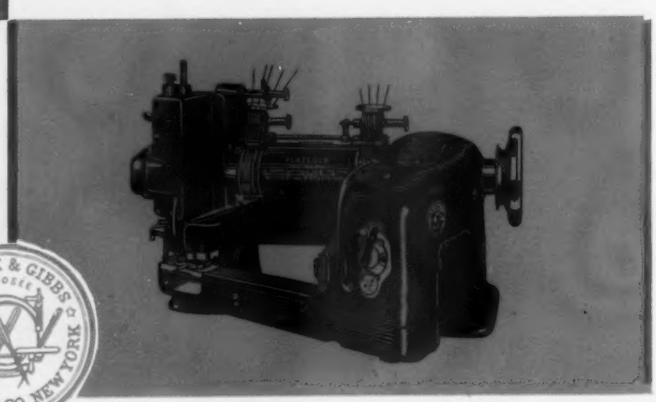
366 Broadway, New York, N. Y.

The "Sophisticated Woman" stresses fine finish in Rayon Garments

THE sophisticated woman—and who is not in these modern times?—is intelligently critical of seaming and stitching. Far-seeing manufacturers of Rayon undergarments act upon this cue to their great profit.

They select garments made on Willcox & Gibbs Machines, because they know that the sheer loveliness of Rayon fabrics will be given commensurately beautiful finish . . . that every seaming and stitching operation will win approval from the daintiest feminine taste.

You cannot go wrong on any Willcox & Gibbs Machine. Long experience, unusual skill and ample production facilities are combined to produce the world's finest sewing machines. And there is a Willcox & Gibbs Machine for every seaming and stitching operation on both men's and women's Rayon garments.



Write our Home Office for samples made on these machines, or submit your own fabrics for sample purposes.

Sole United States and Canadian agents for Cornely and Uniart Embroidery Machines

"For highest machine efficiency, use GENUINE W & G NEEDLES."

WILLCOX & GIBBS DEPOSEE SEWING MACH. CO. NEW YORK

WILLCOX & GIBBS SEWING MACHINE CO.

658 BROADWAY - - - - - - - - NEW YORK, N. Y., U. S. A.

A Practical Glossary of Full-Fashioned Terms

By C. H. Baxter

WITH THIS ARTICLE, Mr. Baxter renews his full-fashioned discussions in these columns. His next article is in preparation. As announced last month, he proposes to discuss needles, narrowing points, press-offs, waste, etc., and will welcome suggestions from any reader as to topics to be covered in later articles. —THE EDITOR.

IN GOING THROUGH the many letters I have received in the past two years in connection with my articles in COTTON, I realized that many of them were written by persons who evidently were interested in full-fashioned hosiery manufacturing but were unfamiliar with the mechanical side of the business and that the term names, which I used in my articles were, as one would say, "Greek" to them. This article is not written especially for those who are experienced in full-fashioned hosiery manufacturing, but is written mainly with the idea of helping those who are anxious to learn the various parts of a knitting machine.

It is said that there are 70,000 individual parts to a knitting machine and an entire book could be written in trying to describe the various parts of a machine. As there are many parts that the average full-fashioned hosiery manufacturer need not become familiar with, I am only going to try to write in this article about the most important parts of a knitting machine.

In manufacturing full-fashioned hosiery, two separate machines are used. One machine called a legging machine or legger, which is used for making the leg part of a stocking (See Fig. 1) and the legging machine also makes the splicing and heel of a stocking. The other machine is what is called a footing machine or footer and this machine makes the complete foot, which includes the sole and toe (See Fig. 2).

Knitting machines are made in what are called gauges. There are many people, including buyers of

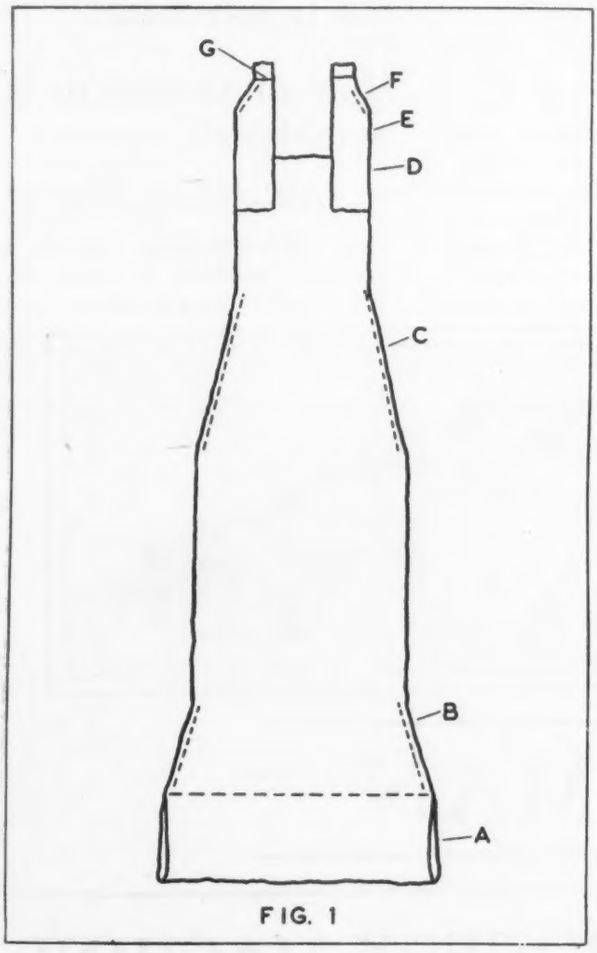


FIG. 1

LEG OF A STOCKING
A, Welt; B, Narrowings in Top; C, Narrowings in Leg; D, High Splicing; E, Heel; F, Narrowing in Heel; G, Loose Course in Heel.

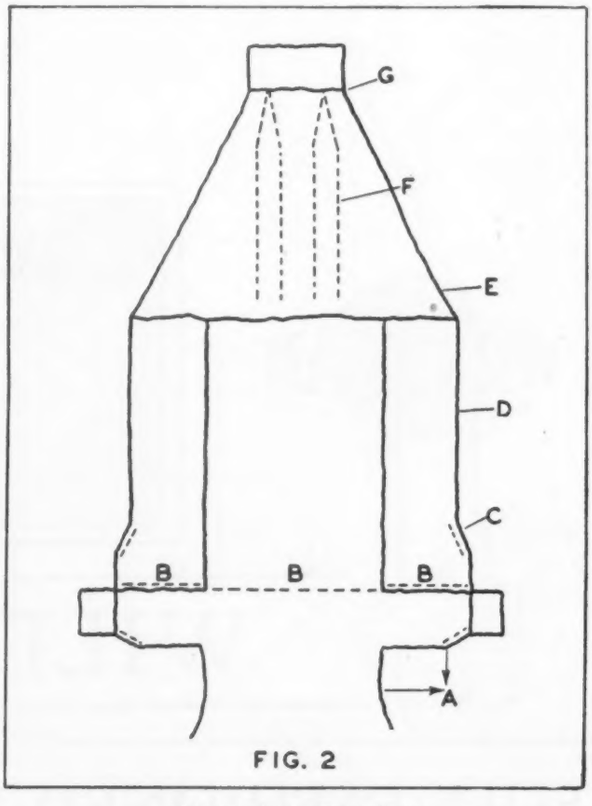


FIG. 2

FOOT OF A STOCKING.
A, Leg and Heel Made in Legger; B, Leg Transferred to Footing Machine Here; C, Gusset Narrowings; D, Sole of Foot; E, Toe of Foot; F, Toe Narrowings; G, Loose Course in Toe.

The lighthouse that withstands the storms has a firm foundation

And—

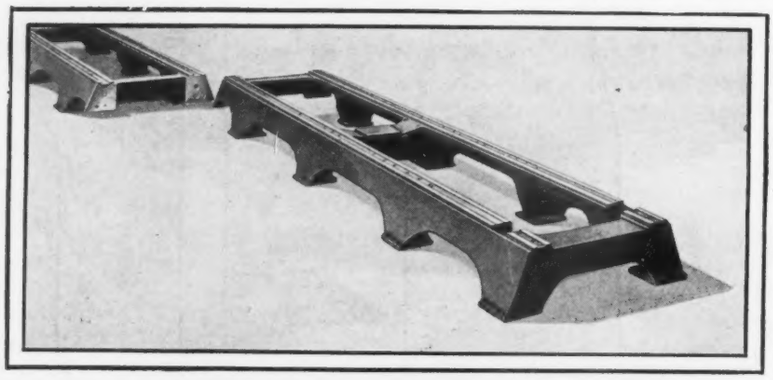
the Full-Fashioned machine that is practically vibrationless has an absolutely rigid cast foundation (weighing about 3,000 pounds) for the legger base.

How about your next machines?

Write for further information.

Wildman Mfg. Co.,
Full-Fashioned Division,
Norristown, Pa.

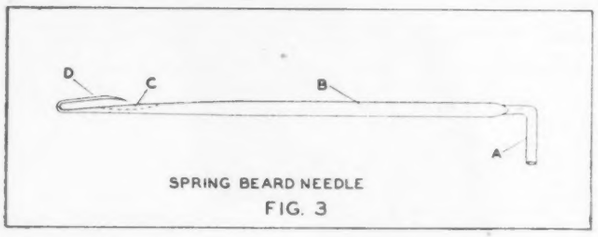
WILDMAN
THE WORLD'S STANDARD



WILDMAN

FULL FASHIONED HOSIERY MACHINE

hosiery, who often ask what is meant by gauge and how can one determine the gauge of a machine the stocking was made on. The gauge of a full-fashioned hosiery machine is determined by the number of needles per inch in the needle bar of a machine. Starting with 33-gauge, which was probably the coarsest gauge used in this country for full-fashioned hosiery, and ending with 57-gauge, which I believe is the finest



SPRING BEARD NEEDLE
FIG. 3

A, Butt that fits in hole in needle bar; B, Stem of needle; C, Groove in Needle; D, Beard of needle.

gauge machine now being in operation. I herewith show a table of gauges and the number of needles per inch for each gauge.

33-Gauge	22 Needles per inch
36-Gauge	24 Needles per inch
39-Gauge	26 Needles per inch
42-Gauge	28 Needles per inch
45-Gauge	30 Needles per inch
48-Gauge	32 Needles per inch
51-Gauge	34 Needles per inch
54-Gauge	36 Needles per inch
57-Gauge	38 Needles per inch

As the reader will note there are two more needles per inch in each finer gauge. Another method used to determine how many needles per inch there are to a certain gauge, is to take two-thirds of the gauge, as follows: Two-thirds of 33-gauge is 22 or 22 needles.

If one is asked how many needle stitches are in the width of a stocking made on a certain gauge, the way to find this out is to measure the width of a needle bar by inches and multiply the number of inches by the number of needles per inch, as follows: If a stocking on a 42-gauge legger is knitted on a needle bar 14 inches wide, one must multiply 14 inches by 28 needles, which would show that the stocking was knitted on 392 needles.

Knitting hosiery is done with needles set in what is called a needle bar. The full-fashioned needle is what is called a spring beard needle and is made from the finest steel that can be obtained. The steel must be tempered properly and at the same time the needle must be springy or pliable. The beard of the needle is the part that prevents the stitch from dropping off and the action of the beard is by a certain cam motion; the beard of the needle is pressed shut to allow the one stitch to come off the needle and is opened quickly at a certain point to allow the stitch just made to remain on the needle. (See Fig. 3).

In the stem of the needle where the beard is placed is a groove and when the needle closes, the beard enters this groove Because of the needle beard springing in and out of this groove, the name Spring Beard needle was given to a full-fashioned hosiery knitting machine needle.

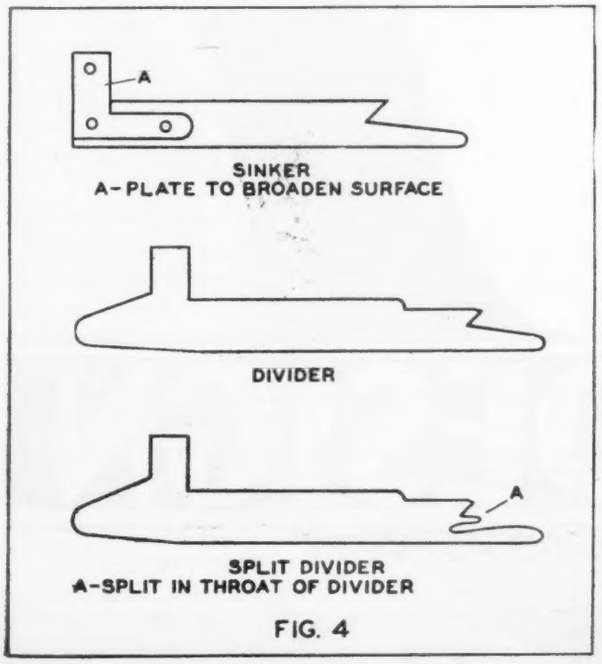


FIG. 4

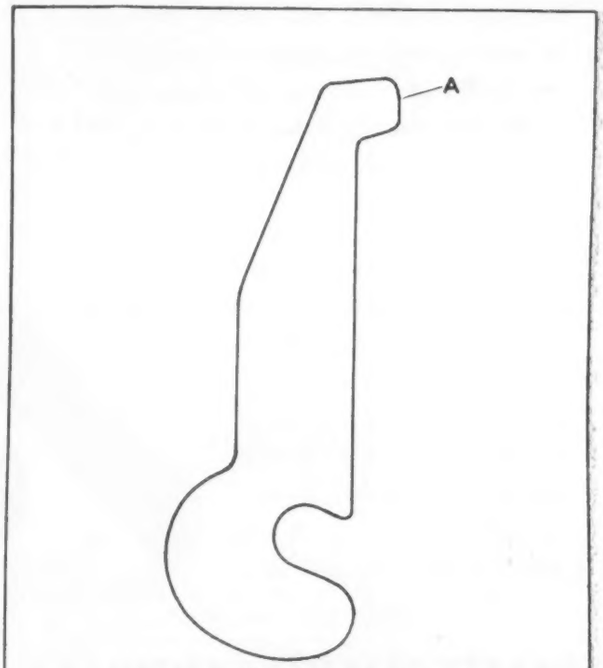


FIG. 5

The stitch on a knitting machine is made with the use of what is called sinkers and dividers. These two parts are made out of high grade steel and are thin blades, which push the yarn between alternating needles, and do the stitch forming or the start of making a stitch. The sinkers have plates riveted on the back of the sinker and the purpose of this is to give a broad surface, so that the sinker can be pushed forward by the striking jack. The divider has no plate riveted on, as the divider is pushed forward by the catch bar.

Yes...

these "nobby" suspenders BELONG *in this* HOSIERY *ad.!*

Twenty years ago — or even ten — who would have thought of trying to increase the sale of suspenders by making them attractive, colorful and smart? No one, of course—because merchandisers hadn't yet sensed the real value of "eye appeal" —didn't realize that color and style would sell even merchandise that might be hidden in actual use.

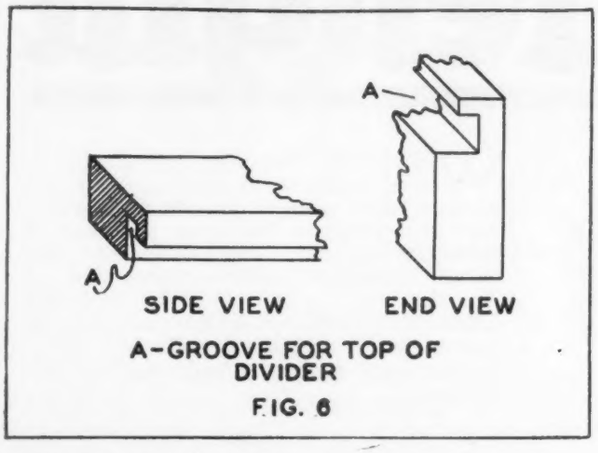
Today, progressive merchants everywhere recognize instantly the sales value of FANCY TOPS for Men's Half Hose, as knit in an almost endless variety of harmonizing colors and designs on Fidelity Multi-Design True-Rib Machines. It will pay you to investigate now.

FIDELITY MACHINE COMPANY
3908-18 Frankford Avenue
PHILADELPHIA, PA.

MULTI-DESIGN

The sinkers and dividers are placed in what is called a sinker head and alternate by having first a sinker and then a divider. Therefore there are only one-half as many sinkers in a section as needles and one-half as many dividers in a section as needles.

There is also a divider that is called a split divider and is called split because of a cut or split in the throat of the divider. The object of having split dividers in a sinker head is to secure a good selvage.



A-GROOVE FOR TOP OF DIVIDER

FIG. 6

(Sinkers and dividers shown in Fig. 4).

The striking jack is the part placed in the rear of the sinker and a series of these jacks are placed in what is called a jack head. For each sinker in a sinker head there must be one striking jack. The striking jack is the part that pushes the sinker forward for the purpose of forming a stitch. (See Fig. 5).

The catch bar is a long steel bar running the entire length of a knitting machine.

This catch bar is grooved at a depth and width to allow the rear top of a divider to enter into this groove and it is the catch bar that pushes the dividers for-

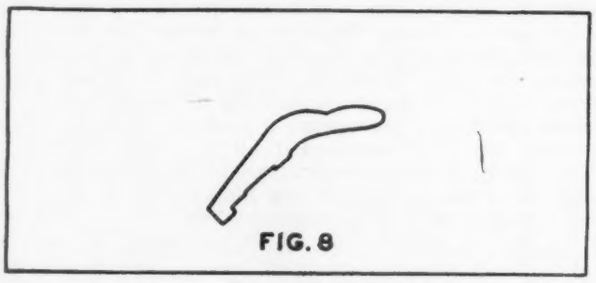


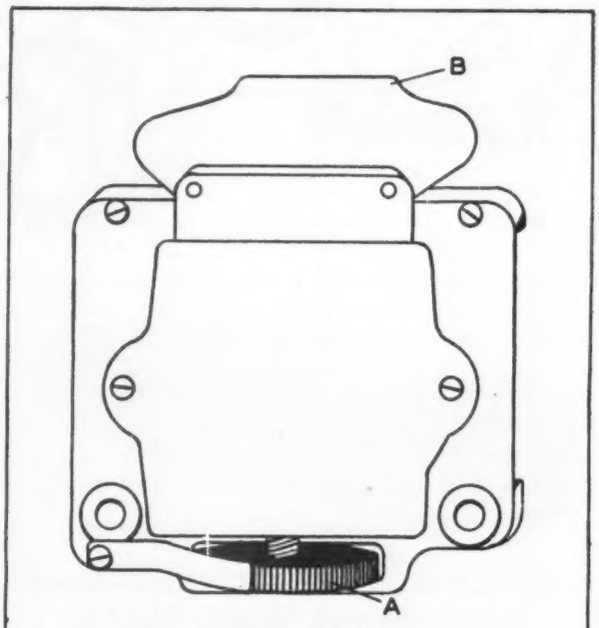
FIG. 8

ward after the sinkers have been pushed forward by striking jacks for the purpose of completing the formation of the stitch. (See Fig. 6).

The slur cock is the part that moves the striking jacks forward so that the sinkers can be pushed forward to form the stitch (See Fig. 7). The slur cock is mounted on a steel bar in the rear of the striking jack head and moves across the jack head. At one end of the slur cock is an adjusting screw and this is the screw where one does the adjusting of the stitch for even lengths and also adjusts the amount of so-called play in the sinker heads.

The knocking over bit is a thin blade of steel and is the part under the sinker head. (See Fig. 8). The purpose of the knocking over bit is to catch the stitches as they leave the sinkers and dividers and to hold the stitches while the needles are moving downward. The knocking over bit is also the part that clears the stitch after it has been formed completely and it is at this point that a clear even stitch is obtained. The action of the knocking over bit is to hold the stitch so that the needles can pull the newly made stitch evenly through the stitch made the course before.

The welt hook is a part placed in a separate bar and is not attached to the machine (See Fig. 9). These hooks are used for catching the first stitches when first starting to make a stocking and then later are used to place the stitches that are on the hooks on the needles. This operation is what is called the turning of welts. One side of the stem of a welt hook is grooved to fit the needle beard of a needle and by the



SLUR COCK
A-ADJUSTING SCREW
B-PART THAT PUSHES STRIKING JACKS FORWARD

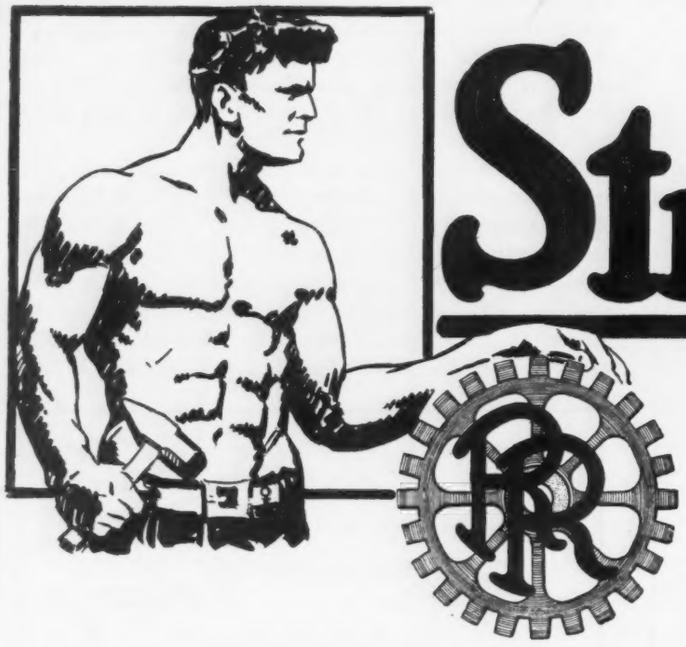
FIG. 7

action of having the needle beard fit into the groove of the welt hook, the stitch on the welt hook can be placed or transferred on the needle. Welt hooks are used for legging machines only, as the leg of a stocking is the only place where a welt is formed.

The narrowing point is the part that is used to pick off the stitch from one needle and transfer this same stitch on the second needle further towards the center of the needle bar. It is this point that is used for shaping or narrowing the stocking at the top after the welt at the calf of the leg, at the bottom of the heel, the gusset in the sole of the foot and the toe of the foot.

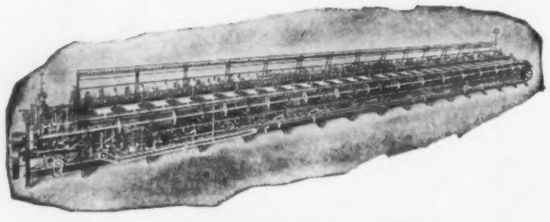
A narrowing point is grooved in the stem of the point and the action of narrowing is to have the needle beard fit into the groove of this point, closing the needle beard, so as to allow the narrowing point to pick the stitch off the needle.

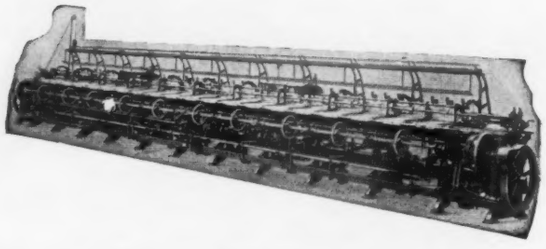
These points are placed in what is called a narrowing finger and these fingers are attached and fas-



Strength

WHETHER you are manufacturing steel products or textiles, your machinery must possess the strength necessary to withstand the wear and tear of speedy production. The two Hosiery Machines described below—represented in America and Canada solely by ROBERT REINER, INCORPORATED—undoubtedly possess that strength. Any Hosiery Manufacturer will enthusiastically support this statement.





EINSIEDEL "REINER" High Speed Full-Fashioned Hosiery Machine

This Machine is extremely popular with Hosiery Manufacturers throughout the country. It turns out the most novel effects in clock and lace designs and in fancy stripes. It operates with speed, dependability and with simplicity. It has large cams and short needles, and has a divided narrowing machine with control in center. Proof of the unfailing satisfaction this Hosiery Machine gives lies in the fact that there are so many in operation in America today.

SEYFERT & DONNER High-Speed Full-Fashioned Hosiery Machine

Only the highest grade materials are used in the construction of this Machine—a product of the largest Flat-Knitting Machine Builders in Germany. It comes in any desirable number of sections and in any gauge. A specially designed Jack Head and Slur Cocks assure a perfectly uniform stitch. Oil rings are used in all main bearings. The sturdy, massive construction of this Machine and its great reliability are guarantees of its extremely high quality of production.

The EINSIEDEL "REINER" and the SEYFERT & DONNER High-Speed Full-Fashioned HOSIERY MACHINES can be seen in operation at any time in our Factory Show Rooms in Weehawken. You are cordially invited to visit us and see for yourself what these wonderful Machines can accomplish.

ROBERT REINER, INCORPORATED

550-564 Gregory Avenue

Weehawken, New Jersey

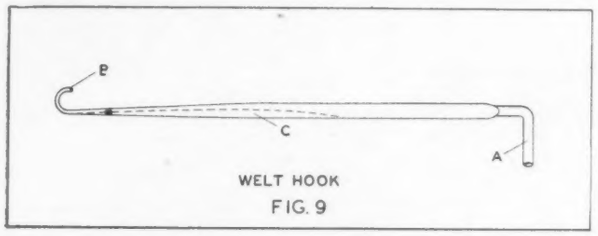
(In Sight of the Woolworth Tower)

Founded 1903 **Phone UNION 502-503-504**

Telegraph Address: "REINER", HOBOKEN, NEW JERSEY

tened to a steel rod directly above the needles. (See Fig. 10.) These steel rods assembled are called the narrowing attachments or narrowing machines and these move down and up in picking and transferring the stitches on the needles.

It is the action of the narrowing point and narrowing machine that make the so-called Fashion Marks in full-fashioned hosiery and the marks are



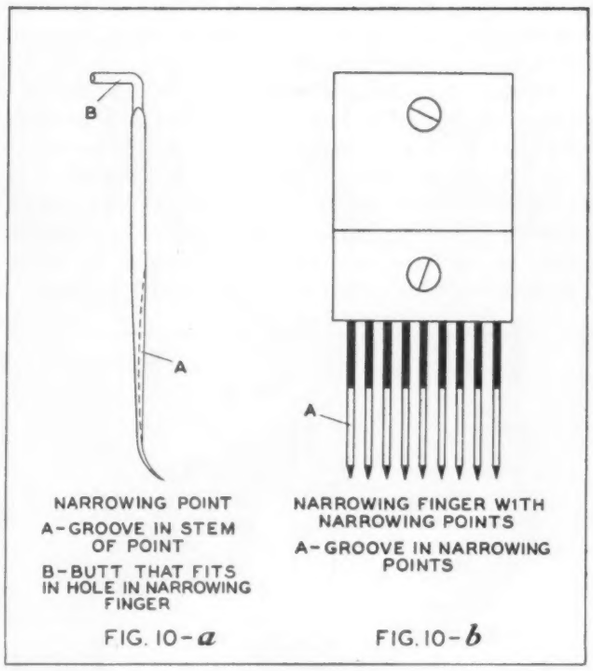
WELT HOOK

FIG. 9

A, Butt that fits in hole in welt bar; B, Hook to hold stitch; C, Groove in stem of hook.

visible in the part of the stocking wherever the narrowing action has been set in motion.

In order to secure a proper tension on the yarn, there are three parts used for tension purposes, namely tension or felt cups, tension wires holding tension rings and snapper springs. (See Fig. 11.) In threading up the yarn the yarn is first placed into the *felt* or *tension cups*, then through the *ring* on the *tension wire*, and lastly through the *snapper*. The felt in the tension cup is used for a firm tension on the thread and by raising or lowering the felt in the cups, more or less tension can be secured. The ring on the tension wire is for the purpose of additional tension and



NARROWING POINT
A-GROOVE IN STEM OF POINT
B-BUTT THAT FITS IN HOLE IN NARROWING FINGER

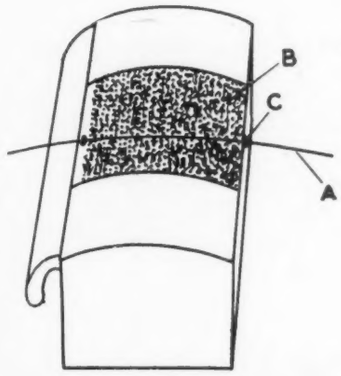
FIG. 10-*a*

NARROWING FINGER WITH NARROWING POINTS
A-GROOVE IN NARROWING POINTS

FIG. 10-*b*

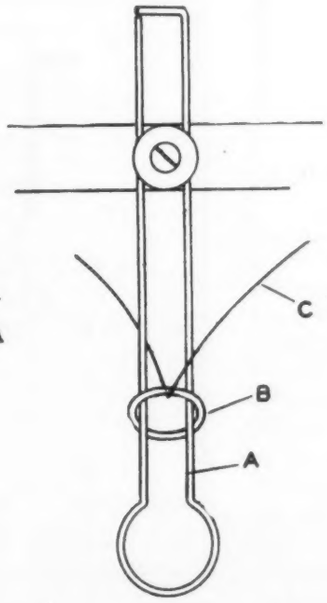
is partly controlled by the raising or lowering of the felt in the tension cup. The snapper is a device for securing a firm tension on the thread during the formation of the stitch.

The carriers, or sometimes called yarn carriers, are the parts through which the yarn is threaded and are used for laying the yarn across the sinkers and dividers for the formation of the stitch. (See Fig. 12.)



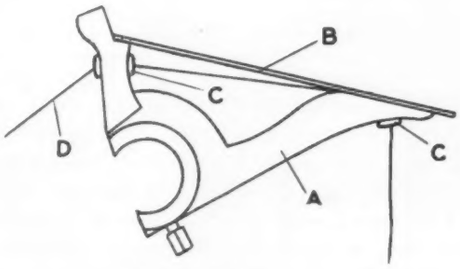
TENSION OR FELT CUP
A-THREAD OF YARN
B-FELT IN CUP
C-PORCELAIN EYELET

FIG. 11 *a*



TENSION WIRE AND RING
A-TENSION WIRE
B-TENSION RING
C-SHOWING HOW THREAD IS PUT THROUGH RING

FIG. 11 *b*

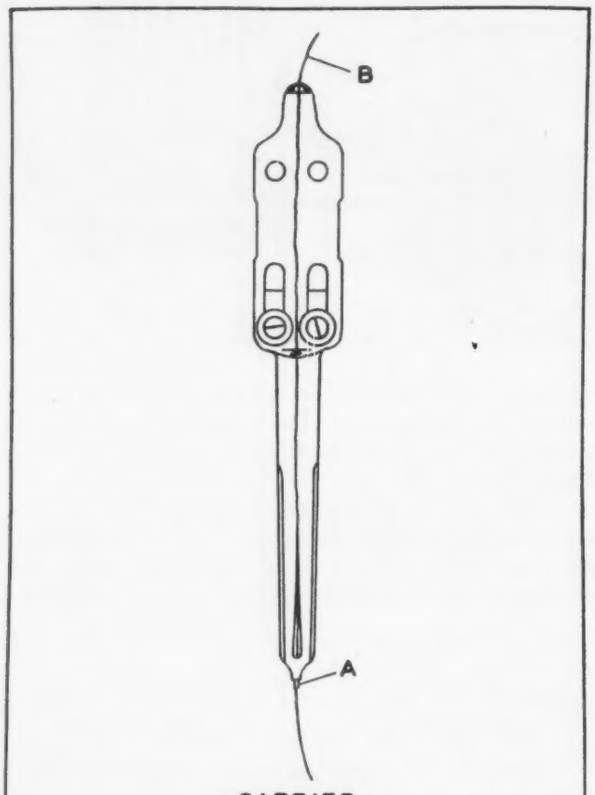


SNAPPER
A-SNAPPER FRAME
B-SNAPPER SPRING
C-PORCELAIN EYELET
D-SHOWS HOW SNAPPER IS THREADED

FIG. 11 *c*

On a legging machine, the usual number of carriers is seven per section and on a footing machine the number is five carriers per section.

Plating on a full-fashioned hosiery machine is a process of lining the heel, sole and toe with a cotton yarn over silk or for the purpose of lining the entire stocking with a contrasting color. Plating the heel, sole and toe gives the outside of the stocking the appearance of being an all silk stocking, whereas the inside of the heel, sole and toe is lined with cotton. The action of plating is to have the carrier holding the



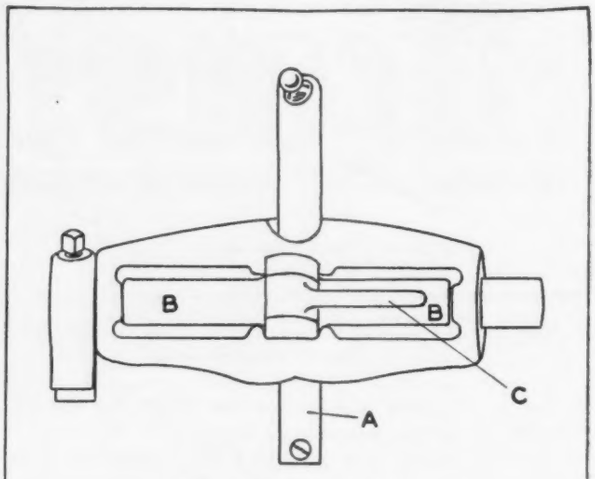
CARRIER
A-CARRIER
B-SHOWING HOW CARRIER IS THREADED
FIG. 12

yarn making the body of the hose, draw across the sinkers and dividers first and the carrier holding the yarn that will do the lining, draw across the sinkers and dividers later than the first carrier.

The loose course device is for the purpose of making a row of loose stitches and is especially used at the beginning of the welt end of the heel and end of the toe. It is necessary in a full-fashioned stocking to make a row of stitches much looser or larger than the regular stitch to give more room for turning the welt and looping the heel and toe on a looping machine. The making of a loose course is done by a cam and roller action that throws the needle bars further back into the sinkers and dividers when the stitch formation is being made.

The friction box (See Fig. 13) is the part used to draw the carriers across the sinkers to lay the yarn. In this box are two shoes upon which the friction leathers are riveted and by the use of these friction leathers the carriers are prevented from re-bounding when the end of the carrier rods strike the carrier stops and also aids the carriers in going across the sinkers evenly.

The rocker motion comprises two steel wings on the cam shaft and a roller to give the needle bar a



FRICTION BOX
FIG. 13

A, Lever to lock into carrier rod fork; B, Friction shoe holding friction leather; C, Lever to lock friction.

rocking motion when making the splicing in the leg of a stocking and the sole in the foot of a stocking.

This rocking motion is for the purpose of loosening the stitch in the reinforced parts of the splicing and sole and by making the proper adjustment to the roller of the rocking motion, various sizes of yarn can be

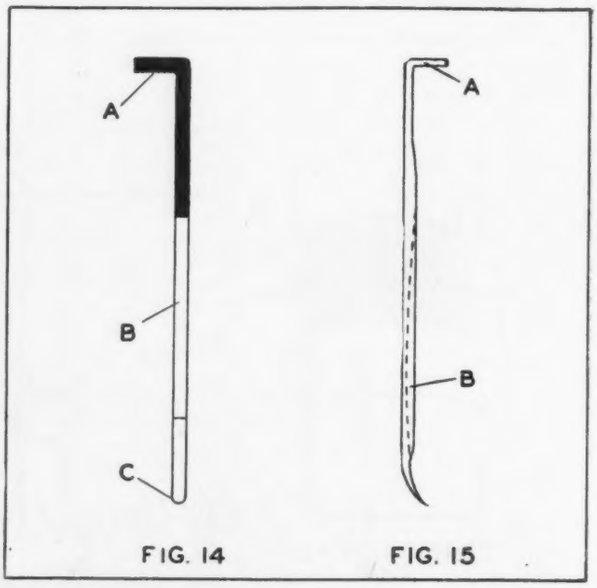


FIG. 14 FIG. 15

In Fig. 14, A is butt that fits into hole in transfer stand; B is groove in stand point; at C note the end of this point is blunt. In Fig. 15, A is butt that fits in transfer bar; B, is groove in transfer point.

used for the reinforcement.

All of the parts mentioned are on legging and footing machines but before a stocking is footed, the stocking must be placed on what is called a transfer stand

AROUND THE SEASONS WITH TORRINGTON LATCH NEEDLES

DECEMBER

ALMANAK

1929 Dec. hath 31 days 12th mo.

Cold blows the wind, the frozen rain
And fleecy snow descend;
For, freezing winter's come again,
And so the year does end.

FARMER'S ALMANAK 1819

COLD indeed blows the trade wind for the knitter who is out of step with today's demand for super-excellence in knitted fabrics.

Torrington Latch Needles help you to supply this demand by contributing their full share to fine workmanship.

Torrington understands the difficult art of producing latch needles perfect in every feature. Torringtons have set a standard for accuracy, uniformity and smoothness of finish.

Also manufacturers of Torrington Full Fashioned Needles, standard for efficiency.

The Torrington Company
ESTABLISHED 1866
Torrington, Conn., U.S.A.

THE TORRINGTON COMPANY
CHERRY AND JUNIPER STS.
PHILADELPHIA

BRANCHES:
C. B. BARKER & CO., LTD.
140-144 W. 22ND STREET
NEW YORK, N. Y.

LOS FABRICANTES UNIDOS
964 CALLE BELGRANO
BUENOS AIRES

FACTORIES AT:
TORRINGTON, CONN.
UPPER BEDFORD, QUEBEC
COVENTRY, ENGLAND
AACHEN, GERMANY

AMERICAN

YARN & PROCESSING COMPANY

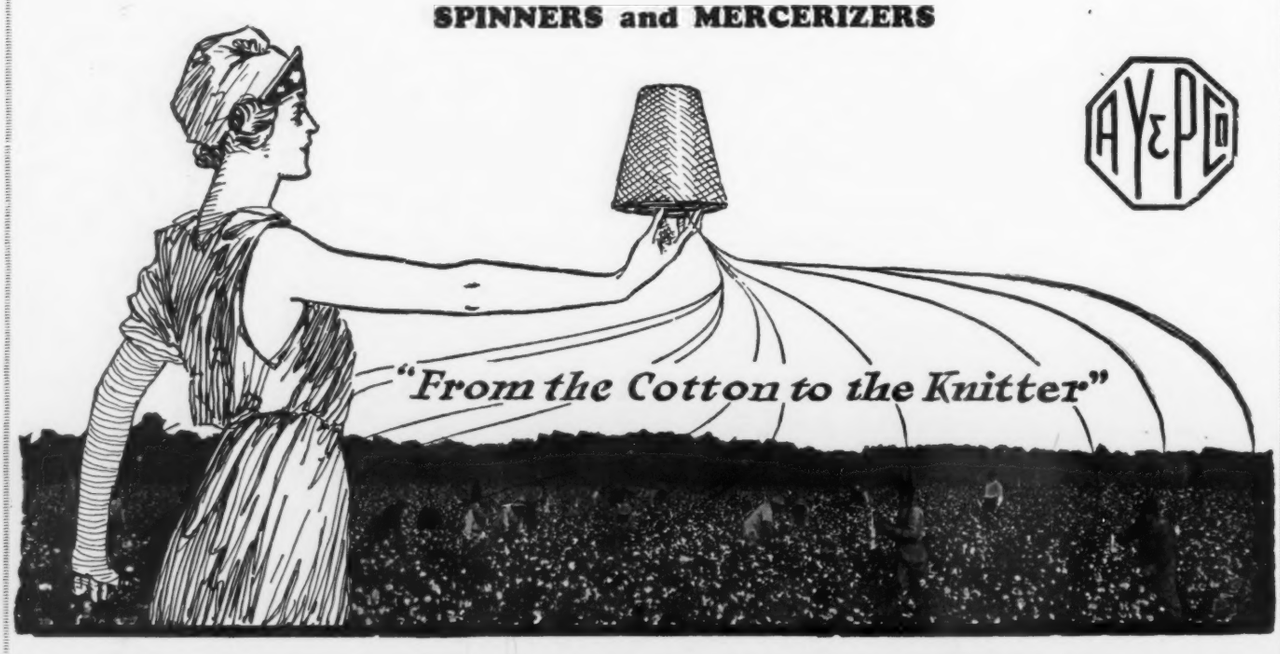
Main Office and Mills

Mount Holly, N. C.

Durene

Reg. U. S. Pat. Off.

SPINNERS and MERCERIZERS



containing a certain number of transfer stand points (See Fig. 14).

After the stocking has been placed on the transfer stand points, a bar containing what are called transfer points (See Fig. 15) is placed in position on the stand and then the stocking is transferred to the points in the transfer bar.

This transfer bar is later used to transfer the stocking from the transfer bar onto the needles of a footing machine. The transfer stand points and the transfer bar points are grooved the same as narrowing points so that the transfer bar points can fit into the groove of the transfer stand points and the needle beard in the footing machine fits into the groove of the transfer bar point on which the stocking is transferred on the needles of a footing machine.

The other main parts of a knitting machine are the cams, rollers and narrowing racks and the principal cams and rollers are as follows:

Needle bar cam and roller.
Presser cam and roller.
Narrowing machine cam and roller.
Draw cam and rollers.
Catch bar cam and roller.
Knocking over bit cam and roller.

It is a knowledge of these parts and the proper adjustments to make that make a full-fashioned knitting machine mechanic an expert.

The various parts that have been described cover the important parts used on a knitting machine and as anyone can now see, a knitting machine is a very complicated piece of mechanism, and comprises many parts, which must function properly at all times, if one wishes to manufacture perfect stockings at all times.

(This article is the first to be prepared by Mr. Baxter in resuming his contributions on full-fashioned work in these columns. The next article is in preparation and will be used soon. In the meantime, we extend to readers an invitation to submit any specific problem they may be having in full-fashioned manufacturing, and Mr. Baxter has offered to give his opinion and experience on any which may be submitted. Opinions from other experienced men will also be secured.—The Editor.)

Among the Knitting Mills

THE SIDNEY HOSIERY MILLS, of Graham, N. C., recently purchased nine Einsiedel-Reiner high speed full fashioned leggers and four footers. The machines are now in course of erection.

Plans are being formulated for the organizing of a full-fashioned silk hosiery plant in the state of North Carolina, probably in Gaston or Mecklenburg counties, by A. F. Dichtenmueller, of Charlotte, N. C., and associates.

The Fisher-Beck Hosiery Mills, Inc., Kingsport, Tenn., of which Raymond Fisher is president and R. V. Beck is treasurer, have been capitalized at $100,000.

An addition is being made to the Morristown Knitting Mills, Morristown, Tenn. Following the completion of the addition, the installation of $12,000 worth of new equipment is expected to increase the capacity of the plant 50 per cent.

A $75,000 addition to the Washington Hosiery Mills, Nashville, Tenn., is expected to double the output of the present plant. Knitting machines have been installed to manufacture misses' fancy hose and half-hose.

Additional machinery is being installed at the Rex Tex Hosiery Mills, Kingsport, Tenn.

Two new units are under construction on East Pontiac Street for the General Hosiery Co., Fort Wayne, Ind. It is stated that 14 new knitting machines, at a cost of $126,000, have been installed this year.

It is reported that 100 new knitting machines are being installed at the Real Silk Hosiery Mills plant, Indianapolis, Ind., to be in operation by January 1st.

The Esther Dye Works of the Esther Hosiery Mills, Graham, N. C., have just begun operations, employing 25 persons, and putting out 300 dozen pairs of hose each week. It is equipped to finish 20,000 to 25,000 dozen pairs of hose weekly. The paid in capital is $100,000, while the authorized capital is $250,000.

The Fulwear Hosiery Mills, Columbus, Ga., have started operation for the manufacture of men's fancy hose under the trade name of "Fulwear Hosiery." The installation of six Scott & Williams, 240-needle spiral knitting machines has taken place, and the plant will use silk, rayon, Celanese and mercerized cotton in production. The initial capacity is 60 dozen pairs daily.

The Lock-Knit Hosiery Mills Co., High Point, N. C., now has 230 Scott & Williams knitting machines in operation for the manufacture of men's fancy half hose, using cotton and rayon combed yarns.

A one-story brick addition is to be constructed at the Belmont Hosiery Co., Belmont, N. C., in order to double the capacity of the plant. Finishing and dyeing equipment will be installed in the new addition.

The Tower Hosiery Mills, Inc., of Burlington, N. C., recently purchased six "Einsiedel-Reiner" high speed full fashioned machines, which are now in operation. It is stated that the company was so well pleased with the first lot that they immediately placed their order for six more machines.

There have been rumors that the coarse gauge knitting machines of the Cadet Hosiery Company, of Philadelphia, will be moved to the plant which they acquired in Decatur, Ala., sometime ago.

Davenport Hosiery Mills, Inc., Chattanooga, Tenn., announced the placing of an order with Alfred Hofmann, Inc., West New York, N. J., for additional full-fashioned hosiery machines. These machines are to be placed in the new mill addition, which is now under way.

It is reported that the Sure-Wear Hosiery Mills, Inc., Brookneal, Va., have started operations with 15 knitting machines for half hose. It is the intention of the company to install additional machines just as soon as workers can be properly instructed.

All of the machinery has been installed and production will soon be under way at the Infant Socks, Inc., Fond du Lac, Wis. The company expects to have between 80 and 100 hosiery machines in operation before the end of the year.

Interstate Hosiery Mills, Inc., New York, recently awarded contract for the construction of a new mill at Lansdale, Pa., to be one-story, 25 x 100 ft., brick and steel. It is reported to cost approximately $100,000, with equipment.

Made-Rite Hosiery Co., Paterson, N. J., was recently formed under the direction of B. Gingert for the production of full-fashioned hosiery. A number of H. S. L. (Theodor Lieberknecht) machines have already been placed in this mill and more will be delivered soon.

The Charlotte (N. C.) Knitting Co. recently decided to close out its entire lot of seamless silk hosiery. In the future they will confine all of their operations to the manufacture of full-fashioned hosiery.

The Nebel Knitting Co., Charlotte, N. C., has let the following subcontracts for an addition to their plant: Miscellaneous iron, R. R. Robertson, Charlotte; and structural steel, Dietric Bros., Baltimore, Md.

The Standard Hosiery Mills, of Burlington, N. C., have placed an order with Robert Reiner, Inc. for Seyfert & Donner high speed full-fashioned hosiery machines. Some of these machines are now in course of erection.

Perfection Hosiery Mills, Inc., Burlington, N. C., recently placed an order with Robert Reiner, Inc. for a shipment of Seyfert & Donner full-fashioned hosiery machines.

SCHUBERT & SALZER

HIGH SPEED TYPE H.S.L.

The Test of Time

A machine may perform... but for how long, and at what cost for maintenance?

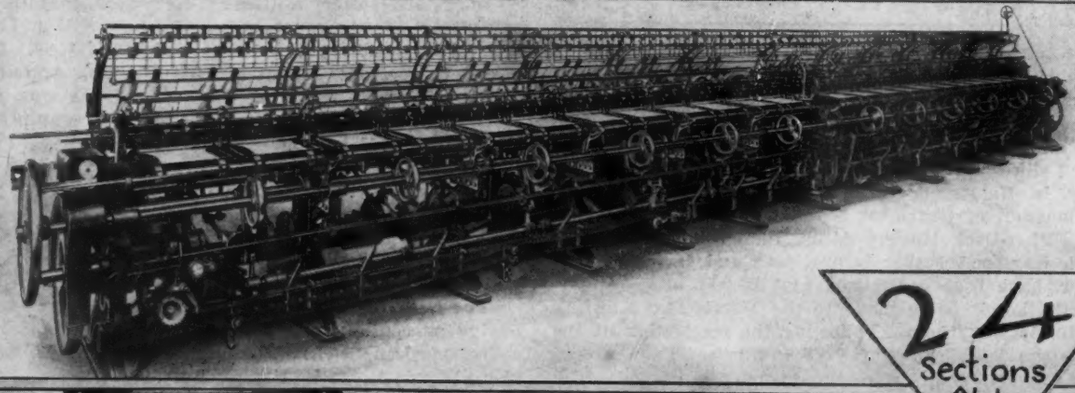
The shrewd buyer considers not only performance, but annual cost figured on the life of the machine.

The length of life of Schubert & Salzer machines is fully as outstanding as their remarkable performance. Ask us for proof.

Sold and Serviced in the U. S. A. by

ALFRED HOFMANN
INCORPORATED
West New York New Jersey

65 COURSES PER MINUTE



24 Sections ALL GAUGES

FULL FASHIONED HOSIERY MACHINES

Letters from an Old Knitter to His Son

HUMAN NATURE is very much the same in full-fashioned and seamless mills. This month OLD KNITTER does a little "sermonizing", and we know you will agree that his remarks are just as applicable to one kind of plant as another. His comments are particularly pertinent under the present-day conditions.

If you have a thought upon which you would like to have OLD KNITTER'S opinion, drop him a line in care of COTTON.—THE EDITOR.

DEAR DAD:

As you know, I have been starting quite a few new full-fashioned machines this year, and have been training a lot of new knitters, and regret to report that I am disappointed in the way some of them have developed. I don't believe that I will average more than 70 per cent of my learners who will make good. You realize the amount I have invested in the "culls," and if I could improve my ability to select more capable men I could increase the efficiency of the plant and at the same time reduce costs.

I think you have an advantage in this respect by having your plant in a small town where you know practically everybody and their family connections and the family characteristics, which enables you to select more intelligently your help than I could possibly do in a city where everyone is an unknown individual in a cosmopolitan population. I would like to have your views on a method to follow in selecting new help.

With kindest regards to all the family, I remain

YOUR DEVOTED SON.

DEAR SON:

I have your letter of recent date with reference to employing learners. You have not done so badly if 70 per cent of your learners make good, as this is a fair average. However, I think you make a mistake by charging all of the remaining 30 per cent to your inability to select the proper material. There is a possibility that you can charge 20 per cent of the failures to the inability of your organization to give proper instructions to these learners.

I find that it does not require exceptional ability to learn to operate a full-fashioned machine successfully, but it does require some exceptional ability to train properly a man with average ability to do the work, and it is a far greater problem to get his best efforts after he is trained. You will find that the knitter you will have to watch most is the expert craftsman who knows all the short cuts, one who can make a course counter move like a speedometer, and by only a touch of his pliers can make a new needle just out of the package fit for the machine.

So this leads me to say that what you should seek most in selecting new help is *character* and *common honesty*. Some mills prefer men with no less than a high school education to learn to knit, which I think is an advantage provided some other just-as-important qualities are not lacking, but I have seen some knitters who could barely write their names who could count 24 per dozen far more accurately than some with a college education. One of the greatest leaks in a full-fashioned mill is the loss through short count and theft.

If you will take your January 1st, 1929, inventory, and add to this all the legs you have paid for on knitting during the year, less every waste stocking produced in all the succeeding operations, and deduct from this figure all goods shipped out during the year 1929, the result should be your January 1st, 1930, inventory. The difference in what you *should* have and what you *actually* have will convince you that what you need most in your organization is honesty.

Then I would say the first trait to look for in employing new help is that of *honesty*.

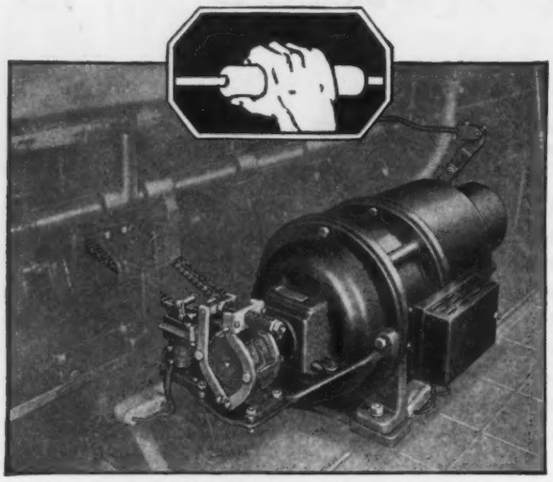
I am glad that you are giving thought to this very important question, as your success depends largely on the kind of people you employ. Then too, you have an even greater responsibility than that of making dividends. If you do not build character along with your stockings you are not a success. I have heard men say that they did not care how their employees conducted themselves off the job just so they were efficient on the job. This is certainly a mistaken idea.

Some time ago a groceryman came to me and reported that a certain employee of mine owed him a goodly sized grocery bill and refused to pay a cent on it. I called this party to my office and asked him what his living expenses were. He told me. Then I asked him if the wages I was paying him would not permit him to live comfortably and honestly. He answered, "Yes." Then I asked him why he didn't pay Mr. Blank

(*Continued on page* 240.)

When the switch is tripped

~ ~ ~ ~ ~ the machine comes to a



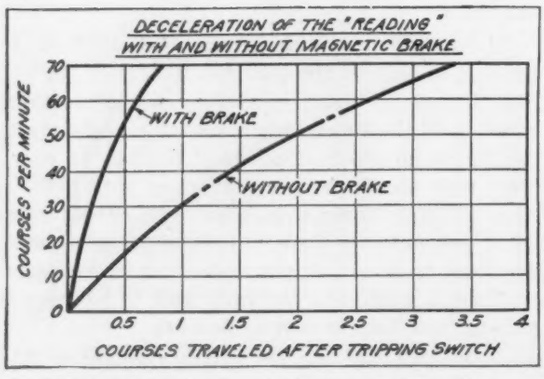
The Magnetic Brake makes it easy for your operators to stop their machines at any position without using the handwheel as a brake. Even at high speed the carrier travel will be no more than ten inches after the switch is tripped.

STOP QUICKLY!

ONE of the outstanding features of the New "Reading" Drive is an automatic magnetic brake which is so positive in action that it will bring the machine to a dead stop before the carriers have traveled a course!

This solenoid type brake is held in the "off" position against the action of a compression spring by an electromagnet. When the switch is tripped by the operator the electromagnet releases its hold and the brake is brought into action by the spring.

Then, the instant all motion has ceased, a time relay *releases* the brake automatically so that the operator may turn his machine to any desired position with the handwheel. Consider the time and energy conserved by this feature of the new "Reading" Drive as well as a decided reduction in press-offs.



The chart above shows you the deceleration of the machine with and without the brake.

TEXTILE MACHINE WORKS
READING, PENNA.

The "READING"
Full-Fashioned Knitting Machine

Replies To Question on Needle Breakage.

EDITOR COTTON:

Replying to the question, "What Is Your Needle Breakage, and How Do You Keep It Down?" asked by "CONTRIBUTOR No. 4618" in a recent issue of COTTON, I will give the following four answers as means of keeping the needle breakage down:

(1) Buy good needles; (2) buy good yarns; (3) keep up the machines; (4) and train good knitters.

Needles are not made to break but to wear out, and under ideal conditions they will do that. If a slub of yarn or a doubling runs in and breaks a dozen needles, send the cone of yarn to the spinner and let him see what carelessness has cost.

If a needle breaks and the stop motion doesn't work, ask the fixer why it doesn't work.

If a knitter allows a yarn to run off and another to drop in and break a lot of needles, or fails to properly set the dial or pattern chain and causes a wreck of needles, explain in no uncertain terms to him the cost of his negligence. If he has more machines to look after than he can properly keep up with, reduce the size of his section.

It does not pay to be too economical with machine supplies—a new switch cam or a new up pick or down pick occasionally is cheaper than needles.

Too much importance can not be attached to the employing of capable fixers. Then, after obtaining efficient men, they should be given the necessary supplies and the proper incentive to work. The fixers, provided they are given the proper co-operation, will then be able to solve the needle problem.

There is nothing to be gained by high pressure methods of competitive needle reports and standards. There is a danger in trying to hold the needle breakage down without removing the cause, or in trying to make the fixers use fewer needles than they should, as the adoption of such a policy will increase the percentage of seconds. Needles are much cheaper than seconds or waste.

My method is to give a fixer only one box of a certain kind of needles at a time and charge this box to his account. He in turn makes out a daily report. He takes inventory of his needles at the end of the month, and I check these and his daily reports with his needle account. If the fixer is made to understand that these daily reports are for the purpose of keeping the proper person informed of his need of assistance in solving his needle problem, he will gladly put down all he breaks and more if he has a sorry knitter or some bad yarns.

Another point that I was about to omit—if the machine was designed to run 230 r.p.m., and it is being run 275 r.p.m., too much should not be expected from the fixer.

With the proper co-operation of the knitters, fixers and management, and the necessary equipment, supplies and raw materials, 3½-inch, 260-needle Model K machines can be operated easily on a basis of ½-needle to a dozen pairs of hose.

CONTRIBUTOR No. 4676.

We invite our readers to make use of this department for the discussion of any and all problems arising in connection with the knitting mill from the office to the packing and shipping departments. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. All questions will be answered as promptly as possible. The names and addresses of the contributors must be given, but will be held in confidence and a pen name substituted when printed. All accepted contributions other than questions will be paid for after publication. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

Baxter Answers Question on Seaming.

EDITOR COTTON:

I note in a recent issue of COTTON that "CONTRIBUTOR No. 4602" is having difficulty with the chain made by seaming machines hanging on the looper at the toe and welt of a stocking when the stocking is being seamed.

There are several things that may cause this, but before trying to adjust the seaming machines, one should see if it is not the fault of the operator. Many times one will find that the operator will raise the stocking as it leaves the cups, after the toe has been seamed and also in this action will loosen the chain of threads which will cause the looper to catch this thread before the machine has stopped. This usually happens where the operator is in too much of a hurry to cut the chain and does not allow time for enough of the chain to run off the stitch finger.

However, if the contributor is sure that it is not the fault of the operator, the following points should be checked and adjusted properly.

One cause for chain hanging on looper is that the looper is set at an angle so that the loops on the looper

HUMAN SKILL

The Most Vital Factor In Every Engineering Achievement

TO the skill of master craftsmen the world owes much for all that it calls modern . . . for the marvels of art and of science and engineering. It is to this Human Skill that Atwood is indebted for the perfection of its machinery for the throwing of Silk and Rayon.

Yarns of silk and rayon would have little of the wide distribution and high market value that is theirs today had they been developed without the artistry of Atwood's craftsmen—men whose years of practice and study in the shops at Stonington has endowed them with a skill beyond the ken of brother journeymen.

True, all equipment for the throwing of silk and rayon is built with machines and tools. But still it remains for the master to create the masterpiece and it is the sheer skill of human craftsmen that marks the difference between just throwing machinery and the "Models of Perfection".

Such is the result of nearly three quarters of a century of service to the Silk and Allied Industries.

THE ATWOOD MACHINE COMPANY

Builders of Silk and Rayon Throwing Machinery

STONINGTON, CONN.

New York, N. Y.
267 Fifth Avenue

Wilkes-Barre, Pa.
965 Miner's Bank Bldg.

Los Angeles, Cal.
Title Insurance Bldg.

Charlotte, N. C.
419 Johnston Bldg.

do not leave the looper soon enough. The looper should be set at an angle so that the loop will fall from the looper as the looper crosses the stitch finger.

One of the principal causes for loop hanging is that the stitch finger is set either too high or too low or that the stitch finger is set too far in front of the run of the rear cup. It is customary to raise the stitch finger by placing a thin piece of cardboard under the stitch finger between the two screws holding the stitch finger in place and by trying either a thinner or thicker piece of cardboard to either raise or lower the stitch finger, this will sometimes stop the loop hanging.

The proper setting of the stitch finger should always be a little to the inside of the rim of the rear cup and this is one thing that will usually stop the loop hanging.

Another thing that will sometimes cause loop hanging is that the needle and looper are too far forward in the front cup. By resetting the looper and needle backward a trifle, this at times will stop this trouble also.

Sometimes the size of the thread used for seaming is too heavy, especially on the needle side and by using a finer size thread, this will stop the trouble.

It also might be caused by using too fine a needle and by using a heavier needle so that the thread will run more freely through the eye of the needle, it will help to eliminate the trouble.

I am sure if the contributor will check up all the points I have mentioned that one of these has been causing his trouble and after he has found out the adjustment that has eliminated the trouble, he will have no further difficulties with loop hanging.

C. H. BAXTER.

Selecting the New Foreman.

EDITOR COTTON:

One of the outstanding problems confronting the superintendent of any mill is that of wisely selecting a new foreman for a department. He cannot always pick the man who has worked for the greatest length of time in that department, because, as everyone knows, there are men who have worked many years in the same department who would never make foremen, so seniority is not the only point to be considered in the selection of a foreman.

Many a man has been made foreman because of his relation to the superintendent, and we have all seen the disgusting results in many such cases. Some are selected because they have a high school or college degree, and truly, this is worth a lot, but sometimes a college man cannot handle help, and he therefore makes a failure of his job.

A man may be an expert on any other job in the department and be a complete failure as a foreman, for, knowing how to do a thing oneself and getting someone else to do it is quite a different proposition.

So, there are several things to be considered when selecting the new foreman, and any superintendent who happens suddenly to be confronted with this problem is likely to be up against it unless he has someone in mind whom he has been studying for sometime. Changing foremen is expensive at best, and much more so if a bad selection is made.

The superintendent does not come in contact with the man out in the departments very frequently, and therefore, he hasn't much chance to learn their views on matters pertaining to the work in their departments, and I know of no better way of learning their views than through the suggestion box. It is well to give the men an opportunity to express their views on anything pertaining to the work in their department and offer a cash prize for the best suggestion each month and you will be surprised at the valuable suggestions that will be turned in. They are often worth many times what they cost and it gives a good opportunity to know who of the men can use their heads, and this should give a good line on your future foremen.

If a man is wide awake enough to give one or two good suggestions each month that will help to eliminate waste or cut down cost of production, he is certainly worth considering for a foreman. You can get a better line on a man through the suggestion box than any other way of which the writer knows, because in this way every man speaks for himself and does not have to depend on the "pull" of some friend or relative, and you do not run the risk of having the "wool pulled over your eyes" by some of his friends.

Any man who is "hen pecked" in his own home is unfit for a job of foreman, because, if he cannot run his own business he certainly is unfit to try to run a business for someone else. So, beware of the "hen pecked" man. If he is burdened down with such troubles outside the mill he cannot be a successful foreman.

To be a successful foreman one must be a leader of men, not a driver; he must be comparatively free from outside worries; be cheerful, but not a clown; be on his job on time and require his help to do likewise; study his employees, because the method he uses to get the most work out of one employee might not work at all with another. He must have a general knowledge of each individual job in his department and know what task to expect of each employee.

There are other qualities to be desired of the good foreman, but if you have a man with all those mentioned, he is certainly worth giving a tryout.

I am not attempting to assume the role of "adviser to superintendents," but am simply mentioning these facts as I see them, and will welcome any criticism from any of the readers of COTTON.

X. Y. X. (GA.)

Wicaco Expands and Changes Name.

Wicaco Screw and Machine Works, Incorporated, Wayne Junction, Philadelphia, Pa., a pioneer in America in the manufacture of machinery for producing rayon, has announced plans for further expansion of their plant by the addition of and erecting an assembling shop of generous proportions. The officers announce that this expansion is predicated on the sound basis that the rayon industry, in spite of its present proportions, has far more to look forward to than has been accomplished—a broader market, a more enthusiastic public, and greater economies in production. Coincident with this announcement, it is stated that the name of the firm has been changed to The Wicaco Corporation, for the sake or brevity, and to better characterize the nature of the company's product.

A Discussion of Oiling Rayon.

EDITOR COTTON:

In reply to "CONTRIBUTOR No. 4078"—A Question on Oiling Rayon"—permit me to say:

Manufacturers using dyed rayon skeins find it highly desirable to oil these skeins preparatory to winding, because oiling provides skeins with better winding properties; a better cone, cop, spool or package can be wound, which will not slip and which will unwind easily and uniformly.

The same oils used on undyed skeins are not suitable for dyed skeins, because these oils are always used straight or in the neat form. By applying these oils to dyed yarn the shade is affected. The straight or neat oil will make the navy blue shade look black. The royal blue shades will appear navy blue. The bright reds will appear to be maroon; in fact, every shade will be materially altered.

Occasionally the manufacturer will use dyed rayon in combination with rubber in the manufacture of elastic fabrics. Here the ordinary rayon oils, that is to say, the straight oils used in their neat form, be they animal, vegetable or mineral oils, can not be used by reason of the fact that they will rot or disintegrate the rubber. Furthermore, oils used on dyed rayon skeins are frequently allowed to remain in the material and, therefore, must be of such a character that they will not turn rancid, give off any odor or cause any greasiness or oil stains in the wrapping paper. These properties are not found in the rayon oils applied to undyed yarn as these are always scoured out before the goods are dyed and finished.

Thus, it is evident, in order to obtain the best results on dyed rayon skeins, a special or different type of rayon oil must be used than that on the undyed yarn.

In the interest of economy, that is, to save operations and time, the dyed rayon skeins should be oiled or lubricated in the last rinse of the dye bath. Water soluble emulsions impart the desired softness, and lubricity to the skeins without affecting the dyed shade. A smaller quantity of lubricant of the proper water soluble variety will produce the desired condition in the dyed skein that is necessary in the case of the undyed rayon using the straight rayon oils.

There are, however, many water soluble emulsions or softeners. While they are suitable for silk, cotton and wool, they are totally unfit for rayon. Many water soluble emulsions react differently in the presence of rayon than in other fibers.

Water soluble emulsions predicated on a soap base are unsuitable for rayon, in my opinion, because they react more energetically with any lime or magnesium salts present in the water and produce lime soaps. These lime soaps so formed are called by a variety of names, such as "lime balls," "dough balls," "nigger babies," etc. These lime soaps float on the top of the dye bath and rinse water and gradually adhere to the sides of the dye kettle and on the skeins themselves. If the deposit on the skeins is not serious enough to be visible in the form of little white specks, they, nevertheless, will cause the skeins to become so sticky and gummy that they will not wind or unwind freely.

The best type of product to lubricate or oil dyed rayon skeins is a properly processed and sulphonated combination animal and vegetable oil. This product is a creamy white semi-liquid paste readily soluble in warm water. It can be used in the dye bath, last rinse or bath. When used in the dye bath, it replaces the dyeing oils, increases the penetration and level dyeing qualities of the dyebath and softens and lubricates the rayon at the same time. When used in the last rinse only the rayon is properly softened, lubricated and conditioned. When used in the bath the dyebath and last rinse, maximum results are obtained which will take care of the most difficult and obstinate rayon.

The usual amounts of these rayon lubricants used in the dye bath is from two to three per cent. If it is used in the foregoing proportions in the dyebath, the amount necessary for the last rinse will be only 1 to 2 per cent. If not used in the dyebath but only in the last rinse, the amount will be from three to five per cent, all proportions based on the dry weight of the rayon and assuming the standard ratio of water to the goods.

This type of rayon lubricant for dyed rayon skeins will soften and lubricate the yarn without any stickiness. It will not turn rancid or give off an offensive odor. It will not be precipitated by hot water, hard water or cold water. It will not discolor or affect the dyed shades. It will not rot or disintegrate rubber. In fact, it has proven to be more satisfactory and economical than neatsfoot oil or any combination of straight or untreated animal, vegetable or mineral oil blends.

CONTRIBUTOR No. 4614.

Preventing Rust Spots on Full-Fashioned Legs.

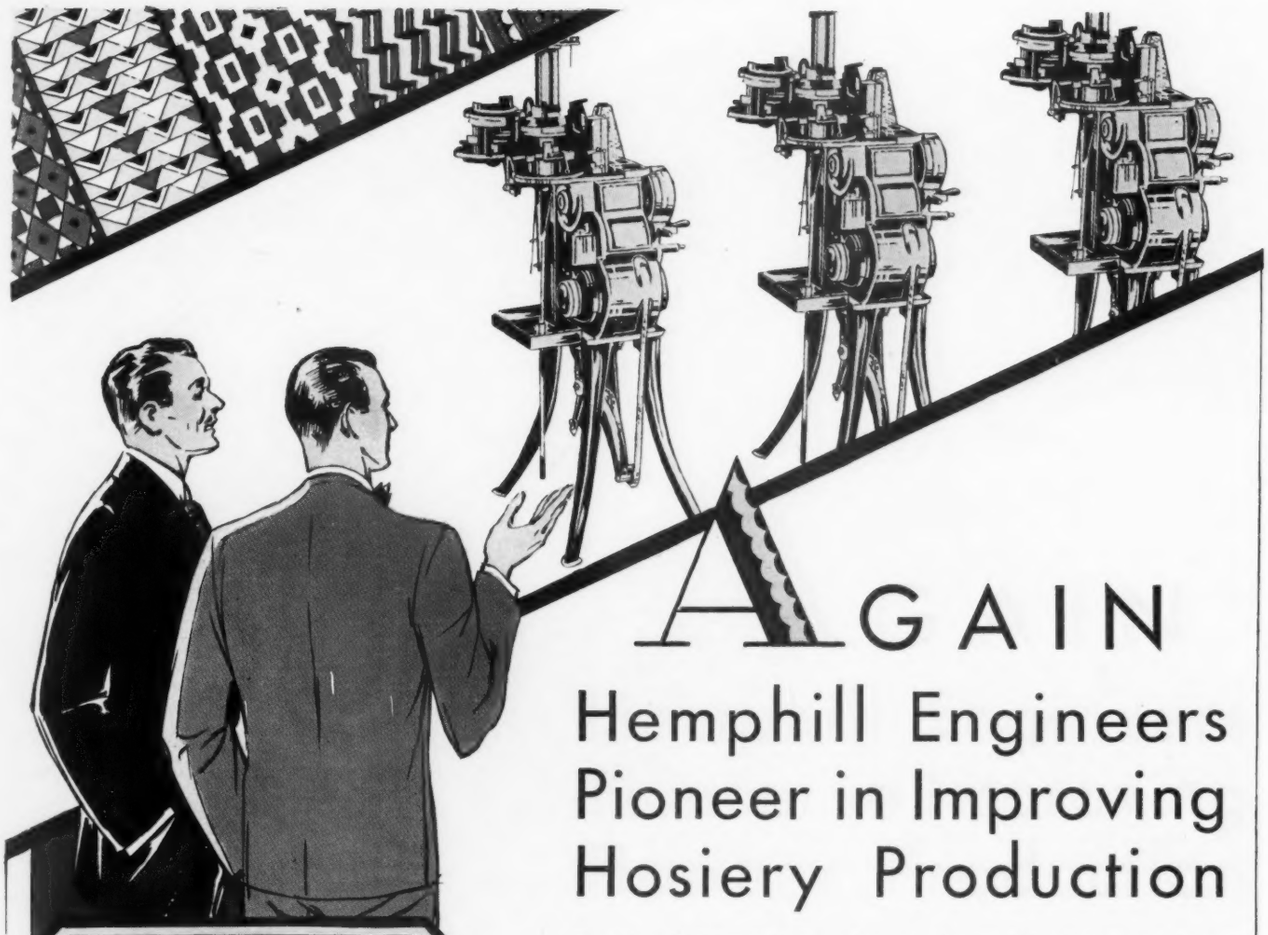
EDITOR COTTON:

Replying to the inquiry of "CONTRIBUTOR No. 4603" as to how to remove the rust spots on full-fashioned legs caused by the legs drying on metal racks, while there are a number of chemicals used by housewives and cleaning establishments for the removal of rust by local application, I don't know of anything that can be successfully used in the degumming or dyebath to remove rust.

The sooner the goods are finished, the better it will be. The rust is largely on the outer surfaces of the stocking. The gum in the silk acts as an insulator for the silk, and in removing the gum, in my opinion, most of the rust will disappear. This will not apply to the cotton, but the chances are there is very little rust on the cotton part of the hose, as the cotton was not wet when laid on the metal racks to dry.

The rust will tender the fabric and the longer the goods are allowed to stand before finishing, the greater the danger of tendering. None of these goods should be bleached, as wherever the bleach liquor comes in contact with the rust spots it will eat a hole in the fabric. My recommendation would be that the goods be finished as soon as possible in the usual way, and dyed a brownish shade nearest the color of rust.

Then I would take steps to prevent further trouble



AGAIN

Hemphill Engineers Pioneer in Improving Hosiery Production

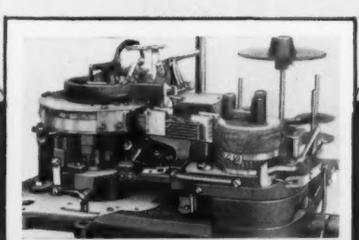
The Hemphill board of engineers, always planning to anticipate the needs of the hosiery industry, have created and supplied the most impressive line of automatic hosiery knitting machines in the world. In their service before and after installation, in their cooperation with the most progressive mills, these pioneers of design, operation and production have built Banner Machines to an ideal of "the widest possible range of usefulness."

And now they announce THE NEW 12-STEP REVERSE PLATING ATTACHMENT, adaptable to any model of Banner Automatic Machine—a revolutionizing device for increasing the patterning capacity of production units already considered highly efficient. The Banner 12 step attachment perfects SINGLE-STITCH PATTERNING. It eliminates the time formerly needed for individual cam adjustment by providing a single master-adjustment which requires no "tuning up" or "running in." And it introduces the Hemphill-designed COLLAPSIBLE DRUM SYSTEM OF CONTROL, allowing any multiple of courses 1 to 48. With the new 12-step, Hemphill engineers have again demonstrated their leadership in the steady improvement of hosiery manufacture.

Notice the examples of designs pictured on next page.
Complete particulars of the Banner 12-Step Reverse Plating Attachment on request of an executive.

THE NEW
BANNER
12-STEP
REVERSE PLATING
ATTACHMENT
FOR ALL
BANNER AUTOMATIC
KNITTING MACHINES

—introducing the new collapsible drum system of control, with single cam adjustment.

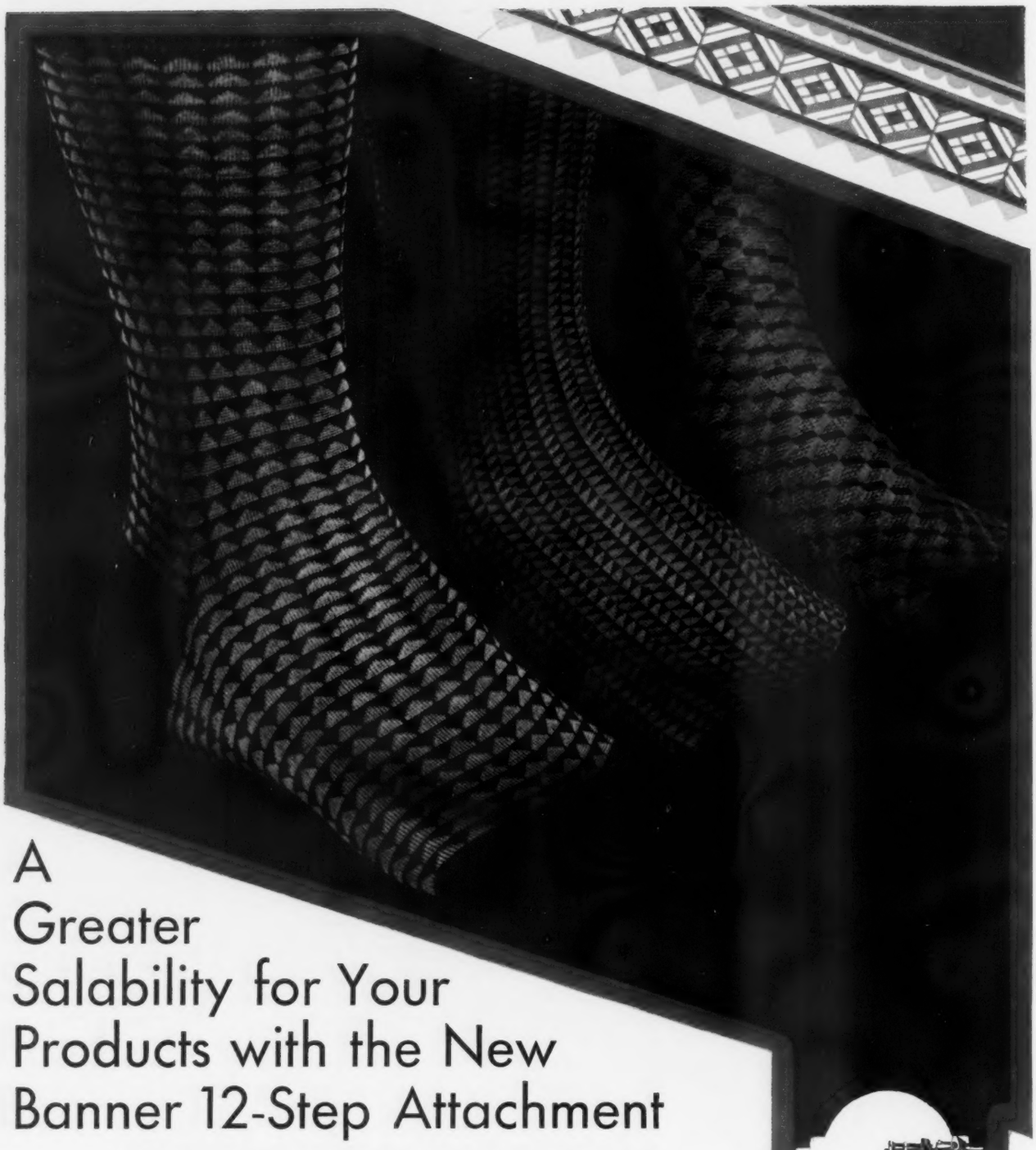


HEMPHILL COMPANY

PAWTUCKET, R. I.

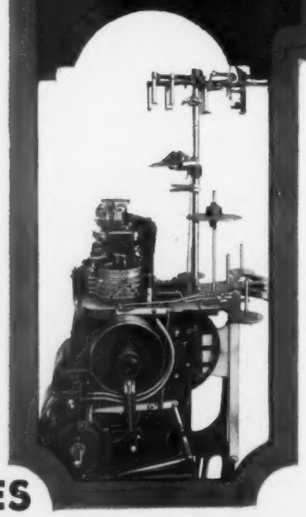
93 WORTH STREET, NEW YORK

PHILADELPHIA	CHATTANOOGA, TENN.	HIGH POINT, N. C.
213 So. Broad	James Bldg.	Commercial Bank Bldg.



A Greater Salability for Your Products with the New Banner 12-Step Attachment

This attachment can be readily applied to even the oldest models of Banner Machines. It transforms any model into an up-to-date machine capable of producing the latest hosiery demands. A brief summary of its features, as described on preceding page, indicates the direct influence of the 12-step on the production speed and the pattern range of machines. Because it knits patterns of greater variety and an excellent quality, the 12-step attachment definitely increases the salability of the finished product—half-hose golf-hose, misses', children's and infant's hose.



BANNER AUTOMATIC KNITTING MACHINES

Printed in U.S.A.

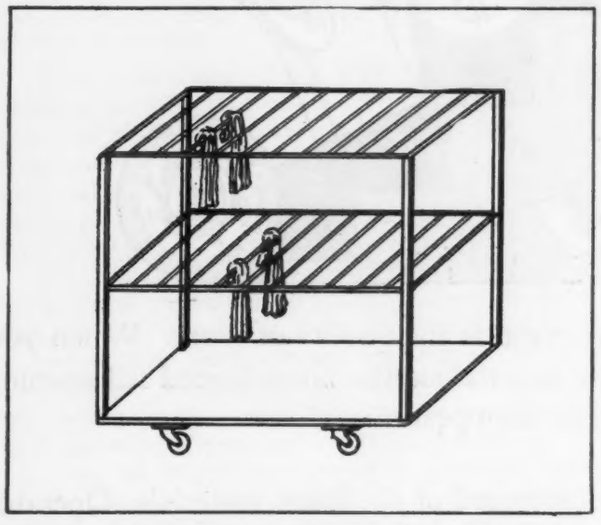
of this kind by doing away with the metal drying racks. I would recommend for this correspondent's consideration an article which appeared in the June, 1928, issue of COTTON, on page 881, giving in detail the construction of all the necessary modern equipment for the drying of full-fashioned legs to prevent trouble of this nature.

On the chance that some of your readers missed this article, I will take the liberty of quoting enough of it to give the idea of the arrangement suggested by the man who submitted the idea.

This man pointed out that when he started the manufacture of full-fashioned hose, he followed the custom of hanging the goods on drying racks, but noticed that the goods which stayed wet longer yellowed more in drying out than goods which dried quickly. Then he continues:

"This trouble gave us the idea of drying the goods artificially, so we fitted up a dry box and some drying racks on trucks and the system has proven highly satisfactory in every respect.

"We are using a Proctor dryer for this work, which is large enough to accommodate two drying



trucks, and each drying truck will carry 200 dozen. We carry a temperature of about 140 degrees F. in the dry box and a load of goods will dry in about one hour. In this way we are able to run the stock of legs at a minimum, and if necessary can run the footers only one hour behind the leggers.

"The dryer is located in one corner of the legging room, in an offset to the building. It is 9½ x 9 feet, and 6½ feet high inside, exclusive of the radiators through which the heat comes. There is a fan, 7 feet in diameter, in the top, for circulating the heated air. It is equipped with a control so that the temperature may be regulated as desired. The front side is fitted with four folding doors, two on either side. Through these the trucks of hose are wheeled.

"The drying truck is a rectangular frame on a solid platform to which the truck wheels are fastened. There are two sets of side rails fastened to the corner posts, and through these side rails are run small wood rods 6 inches apart, on which the bundles of legs are hung. (See the accompanying sketch reproduced from the June, 1928, issue of COTTON.—Editor).

I trust this will be of information to this correspondent and other readers who may be bothered with the problem of rust on full-fashioned hosiery.

CONTRIBUTOR NO. 4611.

Preventing Smash-Ups on Heel or Toe.

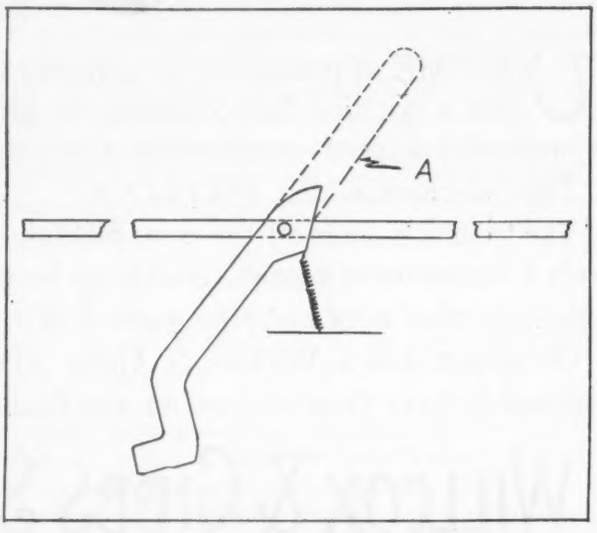
EDITOR COTTON:

It is the desire of every fixer to keep his needle breakage at a minimum. Therefore, anything he can do to the machines to bring this desire about is worthwhile.

On the Scott & Williams machines, every fixer knows how the finger springs are fastened to the fingers—one end on the hook of the finger, the other fastened to the spring bracket.

On the heel and toe finger, most fixers have had the experience of the spring breaking, due to its getting brittle in use, or the end of the hook coming unfastened—this being caused by either a broken end of the spring, or by the hook not being so made that it is substantial. The constant up-and-down motion of this finger causing the foregoing conditions.

When this heel and toe spring breaks, it means that the finger does not drop into the throat plate, sometimes going only half way down as the change is made. The gap closer starts to close, jams into the finger, and with a bang, smashes—practically every long butt needle is broken as the result. The writer has had this happen to him so often, and the management, which is trying like —— to keep costs down, decided that a little thinking along lines for the pre-

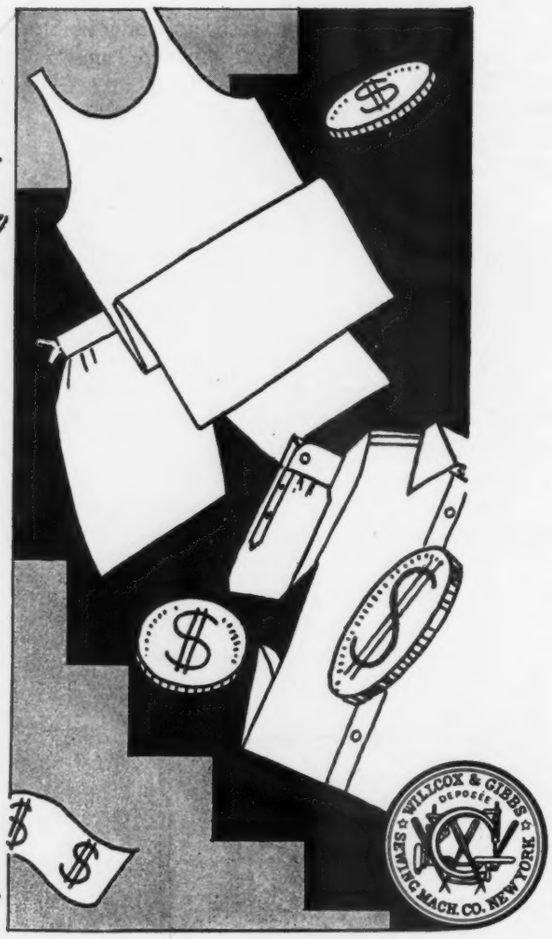


vention of this trouble might be worthwhile. Most of my readers will probably claim that if the fingers and springs are hooked properly and checked over, this would not result, but when you have several hundred K's to take care of, and a bunch of apprentice fixers on the job, it pays to take all possible precautions for preventing this trouble.

If every long butt breaks on a 260-needle K machine, it is evident that the damage done is about one-half the needles in the cylinder, or, in terms of money, $6.50 for the needles alone.

Assuming that a spring breaks or comes apart on

"The MACHINE that makes production" IS THE MACHINE THAT MAKES THE PROFITS



VOLUME of production is as highly important as the *quality* of work. When you find a machine that combines the ability to produce the finest lapped fell seaming at unparalleled speed—your production problems disappear.

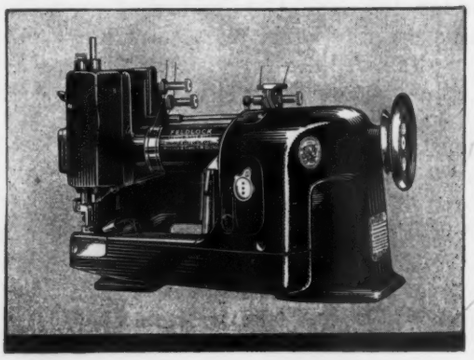
That machine is the FELDLOCK.

The Feldlock feeds *off* the arm. Skillfully constructed of the finest materials. Operates with a minimum of repairs. Stands up under the severest operating conditions. In short, a machine that does everything asked of it, including the lowering of your seaming costs.

Of course it is a Willcox & Gibbs Machine; and equally of course it will give us pleasure to have your request for the Feldlock booklet.

WILLCOX & GIBBS SEWING MACHINE CO.

658 BROADWAY - - - NEW YORK, N. Y.



Sole United States and Canadian Agents for Cornely and Uniart Embroidery Machines

"Good work demands the good needle—use Genuine W & G Needles"

the heel and toe finger, if, by some means, the finger is prevented from going down into the throat plate, that is, kept above the line of the gap closer, no damage will result to the needle, as the finger will not be in the way of the path of the gap closer.

To bring about these conditions, the writer has, as shown by the sketch, Fig. 1, made a counter-balance to the heel-toe finger. This is done by merely taking a piece of thrust rod and welding it on the back tip of the finger, as at *A*. *The amount of this material to be just enough to keep the finger up when no spring is on the finger.* Putting this extension on the finger will not interfere with the working of the spring as usual. The weight on the end of the finger is just sufficient to keep it up when the spring happens to come off, when in action.

CONTRIBUTOR NO. 4600.

Sleazy Knitting on Full-Fashioned.

EDITOR COTTON:

In the July number of COTTON, "CONTRIBUTOR NO. 4581" asked for a discussion in "KNITTING KINKS" on the causes of sleazy and crepy appearance in full-fashioned hosiery.

That a discussion of this kind on such a subject would be interesting, there is not the slightest doubt, but what is needed is a thorough investigation of the cause and causes that produce such undesirable results, not only on full-fashioned hosiery, but also to a great extent on the circular knit hosiery, especially in the finer grades.

All hosiery manufacturers seem to be affected more or less and on the finer-gauge hosiery the sleaziness generally appears at its worst. The blame for it is passed on to the throwster, the knitter, the dyer, the finisher. Everyone seems to lay it on someone else, but up to the present time the real cause seems to be the will-o'-the-wisp of everybody concerned.

A real investigation conducted in a scientific manner by competent individuals is, in my opinion, the thing to do. This emphasizes the need, expressed by many men prominent in the textile industry, of a research bureau financed by the industry, to which problems of this kind could be brought and where they could be investigated to a satisfactory conclusion. As it is, everyone can and may express his personal opinion, all sorts of advice may be given and remedies tried, but when everything is said and done, and when everything seems to be going along nicely, the trouble crops up again and again, until one is tempted to throw up the sponge and say, "O, what's the use!"

Unevenness of the Yarn.

I am going to give in this letter some of the causes which I believe will produce sleaziness in knitting, and which, if taken care of, will affect the appearance of the hose. They are not listed in a sense of criticism of the various individuals that may be concerned, just to point out in some way how to work on this common evil.

One of the causes that will produce sleaziness in knitting is to have the yarn running in thick and thin places on the cone. That may be the result of a poor grade of raw silk, handled carelessly by the little Japanese girls working in those mills where the best silk for hosiery should come from. A thorough inspection of the silk, done with the most approved scientific instruments, would help in such a case. Or, it may be caused by an injudicious use of softeners by the throwster who soaks his silk previous to winding it in a too warm or too alkaline a solution, leaving an irregular coating of sericine upon the fiber. This may also cause irregularity in the hardness of the protective silk gum, and it is reasonable to presume that silk in this condition will produce those irregular stitches in the knitting that we have come to call sleaziness. Using a correct solution of emulients at the proper temperature will go a long way toward correcting the trouble, if it comes from this source.

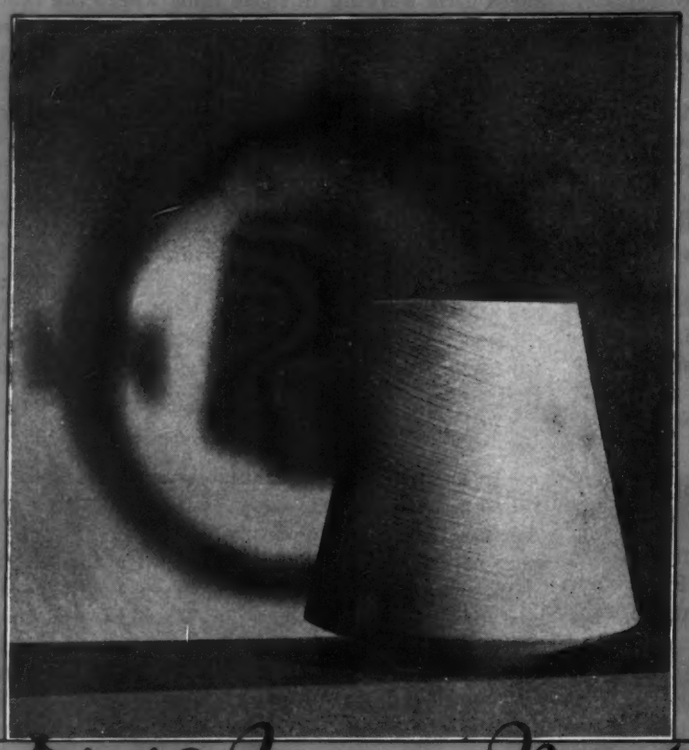
Uneven Moisture Content.

In knitting hosiery, the moisture in the silk should be so regulated that every course is knitted with a constant degree of moisture in it. If a course or a part of it is allowed to be knitted with silk that is too dry or too wet, it is bound to show up in loops that are distorted out of shape, or too tight, and they are the cause of much of the sleaziness that is seen in the finished fabric. The solution used to lubricate the silk for full-fashioned hosiery should be prepared by an expert, using only such ingredients as are proven to be the proper thing for such work, and when a solution is found that will work right, it should be adhered to; and no high-powered salesman should be allowed to come in and convince the buyer that he has a better and a cheaper lubricant that will do wonders if given a chance. I will admit that this is a hard proposition. Everyone is looking for something better, something that will improve the work, and if the door is kept shut to every salesman that may have something really worthwhile, no progress is ever achieved, but the importance of having a good hygroscopic efficient lubricant cannot be overestimated, for therein lies the source of good work or the other kind.

Uneven Twist in the Yarn.

Another cause which no one will deny is giving much trouble in knitting is an unevenly twisted silk yarn. This may be caused in the throwing mill by a variation in the speed of the spindles, belts that slip, frequent stopping and starting. The variation may be short or long, but wherever there is some, there is sure to be a variation in the stitches. They will not lie evenly in the courses, and will show up in crepy effects that cannot be removed in any way. It may be argued that some of the unevenness in the twist cannot be helped, but machines have to be stopped sometimes for some reason or another, that belts may slip under changing atmospheric conditions and cannot be helped, but that is a source of sleaziness appearing in the knitted hose nevertheless, and as this is written partly for the purpose of starting discussion, let us have some of them. The more the merrier, and we will all benefit by them.

As indicated, the sleaziness appears to a greater extent in the finer hose than in the coarser material. The finer yarn used is liable to be knitted with an in-



Natural
Gassed
Dyed
Bleached

Cones
Skeins
Cops
Tubes

Single
and Ply

Dixie Yarns Meet Every Test

Increased strength, greater elasticity, absorbency and super-radiant lustre are important Durene qualities that Dixie's method of *"Controlled Manufacture"* safeguard, from raw cotton to finished yarn

DIXIE MERCERIZING CO. CHATTANOOGA TENN. LUSTRE QUALITY

DURENE

REG. U. S. PAT. OFF.

MANUFACTURED BY

DIXIE MERCERIZING CO.

SPINNERS AND PROCESSORS CHATTANOOGA, TENNESSEE

sufficient number of courses to the inch, and the loops lie too loosely, with not enough support to keep their proper places, and will lie distorted to the right and to the left until they dry, and in that position will show up in the finished product. In the worst cases of sleazy knitting, it will be found that with the same number of courses to the inch, the hose will be several inches longer than others. The remedy in this case is obvious: more tension and closer knitting, and keeping the machines properly adjusted at all times.

Blaming the Dyer for Sleazy Hosiery.

As to just how much of the sleaziness appearing in the finished hosiery the dyer is responsible for, is a question that has never yet been fully understood. Opinions are divided on this score, many believing that most of the sleazy work could be eliminated if the dyer knew the proper way of processing the hosiery. It is mostly those who know the least about what takes place in the dyehouse who are prone to blame the dyeing for their failure to produce perfect work. The boiling off is done at too hot a temperature and should not be permitted, they say. They use soaps and detergents that are too strong and caustic, their machines handle the hosiery too roughly, etc., etc. There are those who claim that a lot of sleaziness is caused by processing the hosiery in the wrong kind of machinery.

In concluding his article on "Sleazy Knitting" beginning on page 87 in the November, 1928, issue of COTTON, C. H. Baxter, the author of your recent series on full-fashioned manufacturing, told the following experience on page 91, in connection with sleazy knitting being caused by the dyer. He wrote as follows:

" * * * I must mention the dyeing process in connection with producing sleazy knitting. Perfect knitting can be absolutely ruined by improper methods of degumming by the dyer. My own experience has shown me that any dyer who uses the machine method of degumming hosiery will distort the stitches and cause the hosiery to be very sleazy in appearance. I must protest that I know absolutely nothing about dyeing hosiery, but I had an experience some years ago with sleaziness caused by degumming in machines, that taught me that the dyer can also be the fault of sleazy hosiery. Previous to this experience, we had a dyer who used the old-fashioned method of degumming in tubs. We changed dyers for various reasons, and when this change was made we at once were troubled with an extreme amount of sleaziness. At first we blamed it on the condition of the silk, then checked our knitting machines, but no improvement could be made and each lot from the dyer was as bad as ever. We then decided to make a lot of hosiery out of one raw lot with the soaping and conditioning the same throughout the entire lot. We knitted the lot on one machine and then gave one half of the lot to the first dyer and the other half to the dyer who was then doing our work.

"The dye lot received from the first dyer showed no sleaziness whatsoever, whereas the lot received from the other dyer was sleazy. Upon investigation, we found that both dyers were using machines for dyeing, but the first dyer degummed the hosiery in a tub, using only a good grade of olive oil soap. The other dyer was degumming in machines with boil-off oil and dyeing in the same machine. This convinced the dyer that the old methods of degumming in the tubs, using olive oil soap only, was the best method, and the result was, that our dyer changed his method, accordingly, and we had no further trouble. I know that this will be interesting information to some of the readers, as in the past few years, I have helped others to overcome sleaziness by calling their attention to the dyeing operation."

According to this experience, we take it from Mr. Baxter that when the results from the two dyers were compared, it was found that the lot which was boiled-off, poling it by hand in a tub, and then dyeing in a machine, was entirely free from sleaziness, while the lot dyed by the dyer who did the boiling off and the dyeing in a machine was full of sleaziness. From this, I presume we are to draw the conclusion that the antiquated method of doing the work is superior to any newfangled machine dyeing. Mr. Baxter also stated, as you will note, that the dyer who poled his boil-off, used soap, while the other man who boiled off and dyed in the same machine used boil-off oil and not soap. This might suggest to the reader the question that maybe if the first dyer had used boil-off oil instead of the soap, and the machine dyer had used soap instead of oil in boiling off, "the results would have been reversed," as "CONTRIBUTOR NO. 4113" brought out in disagreeing with Baxter on page 341 of the January, 1929, number.

There is absolutely no question in my mind that a lot of work can be spoiled in the dyehouse by a dyer who does not know his business as he should. There is a notion, all too prevalent among the hosiery mills, that any young man with average intelligence can be shown, in a short time, how to dye hosiery. That might have been the case when nothing but cotton hosiery was knitted and dyed afterwards, and no silk was knitted in the gray. Now, when silk hosiery is knitted finer and finer every day, and the dyer has to know not only how to dye the hosiery but also how to keep it in perfect condition during the processing, that notion should be thrown into the discard, together with the idea that to run an automobile over ten miles an hour is criminal. The trained dyer knows what is the best thing to use in boiling off to get the best results. If boil-off oil does the trick for him, why should he use soap? On the other hand, if it is soap that gives him the best results, that is the thing for him to use, but there are soaps, and there are oils, and there are also lemons in both cases.

So far as sleaziness is concerned, the dyehouse is the last place one should look to as a means for preventing it, if it is already in the goods, but the dyer can cause the hosiery to look crepy, chafed, wrinkled, and a lot of other imperfections can be caused in the dyehouse by working goods too long, boiling them too hard, letting them lie around to wrinkle and dry up for days, using destructive chemicals, strong detergents and strange concoctions, etc.

In conclusion, I should like to see this discussion opened up in COTTON'S columns again.

FARBER.

DURENE

REG. U.S. PAT. OFF.

NATURAL, BLEACHED AND COLORED

YARNS

MAIN OFFICE

123 SOUTH BROAD STREET

PHILADELPHIA

Manning St.
HIGH POINT, N. C.

432 Fourth Ave.
NEW YORK

418 Franklin St.
READING, PA.

323 So. Franklin St.
CHICAGO, ILL.

James Building
CHATTANOOGA, TENN.

52 Chauncy St.
BOSTON, MASS.

HAMILTON, CANADA

LOS ANGELES

MILLS

CHESTER, PA.

BELMONT, N. C.

ABERFOYLE MANUFACTURING COMPANY

Representatives in All the Principal Countries of the World

The KNIT GOODS MARKETS

KEEN COMPETITION which has prevailed in the market for knit goods since early in the year, its start antedating by some months, at least, the upheaval in the securities markets, now can be viewed as having been instrumental, largely, in preserving a relatively stable condition, with no price changes to cause a near panic or suggest possibilities of one in either of the three major divisions of the knitting industry. Instead of inflation, prices have been unduly low, notably in most lines of hosiery. Whatever declines have been sustained may be regarded as in the nature of an adjustment such as often comes about from time to time in the routine of the markets.

While demand for silk hosiery for the holiday period had a sustaining influence, it became apparent in the carefully studied action of leading manufacturers that it was realized it was time to take the matter of naming prices out of the hands of designing buyers whose tenure of office in that position depends upon their ability to buy so cheaply that they can undersell rivals and show a juicy profit for their department.

That the buyers of some of the more reputable big stores which constitute the great outlet for women's hosiery were bent on forcing lower rates became evident along in the early part of November, when they were boasting they would place no orders for holiday goods before the first week in December. This seems to have been believed by sellers other than those who had orders and goods ready for shipment to stores from which had come declarations of a holdback policy. One Pennsylvania mill was filling a 1,000-dozen order for full-fashioned chiffons on the day a buyer stated in a business interview that as he was assured of deliveries if he placed his order not later than December 1st he was in "no hurry to stock up for Christmas." Two similar cases of contradictory statements were uncovered in one city alone, the stores in each instance having done their "holiday shopping," while still receiving specially priced goods for their pre-Christmas sales, of which there appeared an unusual number, in observance of an anniversary of something or other.

Although it was not until the middle of November that the Berkshire Knitting Mills announced its price list for deliveries for the first six months of 1930, it appears the trade of this and other pivotal mills had been given to understand there would be no changes, for it transpires that two or three weeks before the price announcement came out the Apex Hosiery Co., in Philadelphia was reported sold up of its production for four solid months. This condition, which existed in other mills, was, of course, represented in blanket orders, against many of which details may not be received for some weeks.

The Northmont Hosiery Co. in Reading, selling to retailers, as early as the first week in November was declining orders for deliveries prior to February. The Apex and Northmont are representative of full-fashioned mills distributing through jobbers and those selling the retail trade direct. A representative mill in the seamless group, that of the Weinerth Knitting and Manufacturing Co., Reading, is and has been under no less pressure than the two others. The Weinerth, it may be said, is conspicuous, in the seamless division, for its several numbers of silk and silk-rayon hose with fancy heels.

Speaking generally, northern mills operating circular machines have been not so well engaged recently, some knitting only to order and most of them on a curtailed production basis, more particularly as to their silk-rayon lines. There has been also a slackening in demand for allover silk seamless hose. While it had been made to appear that interest in straight rayons for women was waning, several manufacturers in the Philadelphia and Reading areas who were about to discontinue the use of rayon, except in combination, lately were knitting more of it. Several of the full-fashioned mills, on the other hand, now are using less. It is observed in the trade that the combination yarn is seldom mentioned in descriptions of hosiery in retail stores. Competition is, and it seems, will be, restricted mainly to silk. What appears an incident worth referring to as indicating the drift was a Philadelphia chain of hosiery shops' second surrender to a rival within a month after rigid adherence to a given policy for more than five years.

Sells Hosiery, Not Specifications.

The Berger Hosiery Stores, a chain of eight, had as a minimum price for both its chiffon and medium service numbers $1.15 a pair. The management paid not the slightest attention to dollar stockings in neighboring stores and never offered a pair of seamless stockings even during the palmiest days of the bareleg fad. A few weeks ago a rival chain made a price of $1.05 for its leading number. This was more effective than an even dollar and was promptly met by the Berger establishments, whose next move was to lop off the nickel. Having built up a strong clientele the Berger chain banked on adding prestige by putting its former $1.15 stocking in the dollar class. And it is stated that a neighboring shop's exploiting of a silk-to-top number for 95 cents has not annoyed Berger's.

David Berger's explanation of his success with low price hosiery appears to vindicate the contention of some factors that it is unnecessary for stores to describe a stocking by gauge, so long as women do not ask for details of construction and select what pleases, regardless of gauge. Mr. Berger said: "We simply sell stockings, the best we can offer for the price we get for them. We never have sold specifications. Our stockings carry our brand, and the brand does not change. We depend upon it to be as effective since we reduced our price as it was before. We started business nine years ago with one store and now have eight."

THE TEMPLE FULL FASHIONED HOSIERY MILLS, INC., at Temple, Pa., near Reading, recently starting production of 45-gauge full-fashioned hosiery, announces that it will make additional installation and by August next will have a yearly output of 150,000 dozens. The president of the company is Wm. Dojan, who was one of the founders of the Rosedale Knitting Co., on the outskirts of Reading.

Berger's is reputed having established its trade on 39-gauge and 36-gauge hosiery. Berger's highest annual rentals are $30,000, $8000 and $12,000 respectively for three of the eight stores, neither of which makes use of the term gauge, which is, of course, common to all popular price stores of this class. "We're never out of any given size or any color in our regular range," was one explanation offered for the success of the high rental shops that sell low price stockings that are not described by gauge.

Report All 42-Gauge Machines Active.

Although, it is estimated, there are in action fully one-half as many 42-gauge full-fashioned hosiery machines as of all gauges combined, and while most all of the new installation is of 45-gauge, it appears from casual statements of manufacturers that most of the plants which this fall have been operating with two shifts of employees are of 42s. Some say there is not a 42-gauge machine idle for want of orders. The specific statement is made by executives of mills knitting several gauges that 42s and coarser are on capacity production from 20 to 24 hours a day, while often the finer gauge is on daylight schedule.

Manufacturers installing 45-gauge machines do not deny that at the moment the 42s appear to be the busier, but state they are building for the future, and regard 45-gauge as the more flexible machine, a point which for the last few years was made for the 42s. Besides, mill men say, the machine builders counsel against adding any of the latter. A story as related by a manufacturer negotiating with the representative of a machine builder is to the effect the latter refused to consider an order for 39-gauge, insisted upon purchase of a 45s, but was willing to compromise on 42s, which the buyer eventually selected.

According to trustworthy reports from several commission establishments and buyers for department stores, it has been possible to obtain greater recessions from established prices of 45-gauge hosiery than of any of the coarser gauge. There is a variance of fully one dollar a dozen between the asking price for a guaranteed 45 four-thread with picot top and the price named for several mill lines similarly described but the description not guaranteed.

A mill near Philadelphia last month was advertising 45-gauge silk in the gray. Three new mills soon to be in operation in Pennsylvania will install 45-gauge equipment, and several which but recently started on production have the same gauge. Some mill men express the suspicion that considerable of the hosiery sold as 45 really is knitted on 42-gauge machines, and that this accounts for an indicated ample supply of the finer and a reported sold up condition as to the coarser gauge. The matter of fineness is entering into discussions of market conditions as variously forecast for the first few months of 1930, when the wholesale markets are expected to feel the first severe test of the effect, if any, of the stock crash on distribution of commodities.

Say Full-Fashioned Industry Is Not Over-Expanded

THAT THE FULL-FASHIONED hosiery industry has been over-expanded, is doubted by some of the more important factors in its growth, who point to current demand for goods in excess of the facilities of some mills to supply it. There may be an excess in certain types, it is admitted, but in the aggregate there has this fall been no cumbersome surplus, with numbers of mills on overtime schedules, shipping production and rejecting some proffered business. Present conditions had cast their shadows before them, say the more optimistic, and the threatened over-installation was held in check. Plant additions have been on the conservative side, it is held, and normal increase in production has not gone beyond increase in consumptive demand, this assumption being based on a larger population, the tendency to better dress and the steady drift in the direction of full-fashioned.

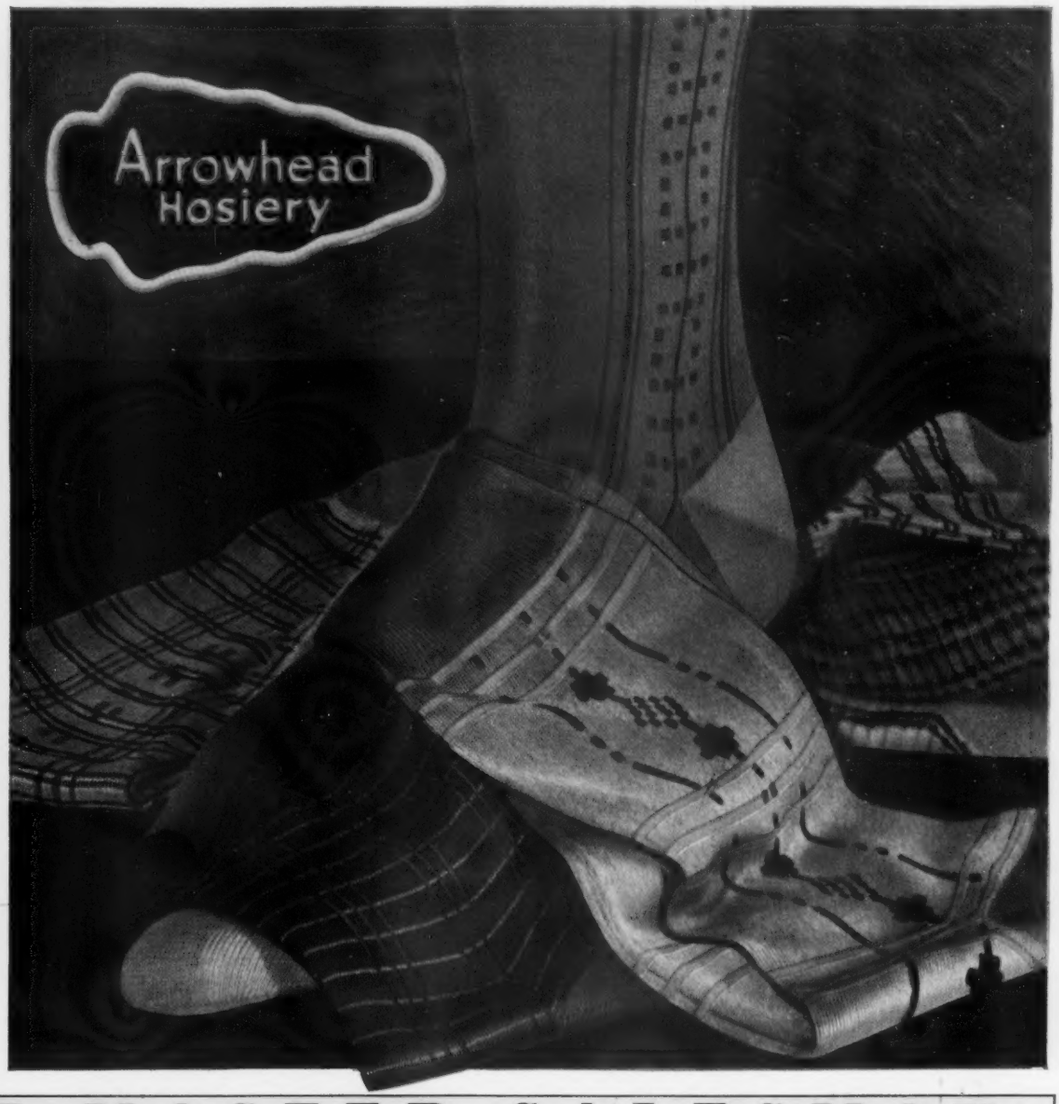
In some circles doubt is expressed of the sincerity of those who have raised storm signals. The chief of a moderate size old-time mill in Philadelphia professes to be quite apprehensive of early 1930 developments. He describes conditions in his plant as slow and unsatisfactory, although every machine is operating full time single shift. He is curtailing in purchases of supplies, believing, he says, "I can buy cheaper in January."

Hosiery buyers for stores also have been talking gloom, but placing orders right along nevertheless. It is conceivable, say lookers on, that "some of the manufacturers are adopting the tactics of buyers." It is suggested by a mill head who is rated among the conservative that, while he believes it better to proceed with more caution than is attributed generally to the trade at large, too much warning is liable to cause as much damage as too little attention to conditions as they are and may be later. He cites two views from the same source within a week, one that as "the water was squeezed out of hosiery prices in September, regardless of what declines may come, hosiery prices will drop no further," and the other, "Prices are fully deflated but they can be forced lower if mills carry even normal inventories and follow the policy of operating full time instead of producing against orders."

That January and February will be dull months in the hosiery busniess is not wholly unexpected and, it is pointed out, would represent nothing unusual, for it is common for demand and production to fluctuate, the market usually taking a dip in or around the first two months of the year and again in July-August. That the 1930 ebbing will go somewhat further than ordinarily is not an improbability. One certainty is that merchants will buy hosiery more closely in the next few months than ever they did, and already it is apparent to close observers that an urge to reduce inventories will be needless. The burden of carrying stocks for dealers will fall the heavier upon manufac-

IMPORTANT TO MILL EXECUTIVES: *If you want to know in what publications, buyers of your fabrics (and how many of them) will see this advertisement this month, write your name, title, company and address in the coupon below and mail it to Sales Promotion Dept., Franklin Process Co., Providence, R. I. We will then send you the complete story, including our Booklet, "What Franklin Process Can Do for You."*

COLOR



THE MASTER SALESMAN

Smart, attractive colors have been a major factor in the success enjoyed by Arrowhead Men's Fancy-Colored Half Hose which the Arrowhead Hosiery Mills of Chattanooga, Tenn., sell direct to the retail trade.

Even more important is the quality of the colors in the cotton yarns used in Arrowhead Hosiery, which are applied at our Central Franklin Process Plant at Chattanooga.

The dyes (specified by the manufacturer to conform to their standard of color fastness) are applied by the Franklin Process wound-form pressure dyeing method which forces the color through every fibre of the yarn, and yields exceptionally bright, durable shades.

The growing business of the Arrowhead Hosiery Mills, coming direct from the retail trade, speaks well for the satisfaction given by these colors.

Several hundred other lines of fabrics and garments which contain Franklin Process Colored Yarns are listed in our Portfolio—"Why Franklin Process Colors and Where."

If you buy or sell yarn-dyed fabrics, or garments, you should have a copy. It's free. Simply mail us the coupon.

• • FRANKLIN PROCESS COMPANY • •

Largest Job Dyers of Yarn in the World also Yarn Spinners, Manufacturers Glazed Yarns, Dyeing Machines

PLANTS
Providence Philadelphia
Franklin Rayon Corporation
Providence, R. I., So. Boston, Mass.
New York Office, 66 Leonard St.

FRANKLIN PROCESS

Commission Dyeing of Yarn in the Wound Form

PLANTS
Central Franklin Process Co.
Chattanooga, Tenn.
Southern Franklin Process Co.
Greenville, S. C.

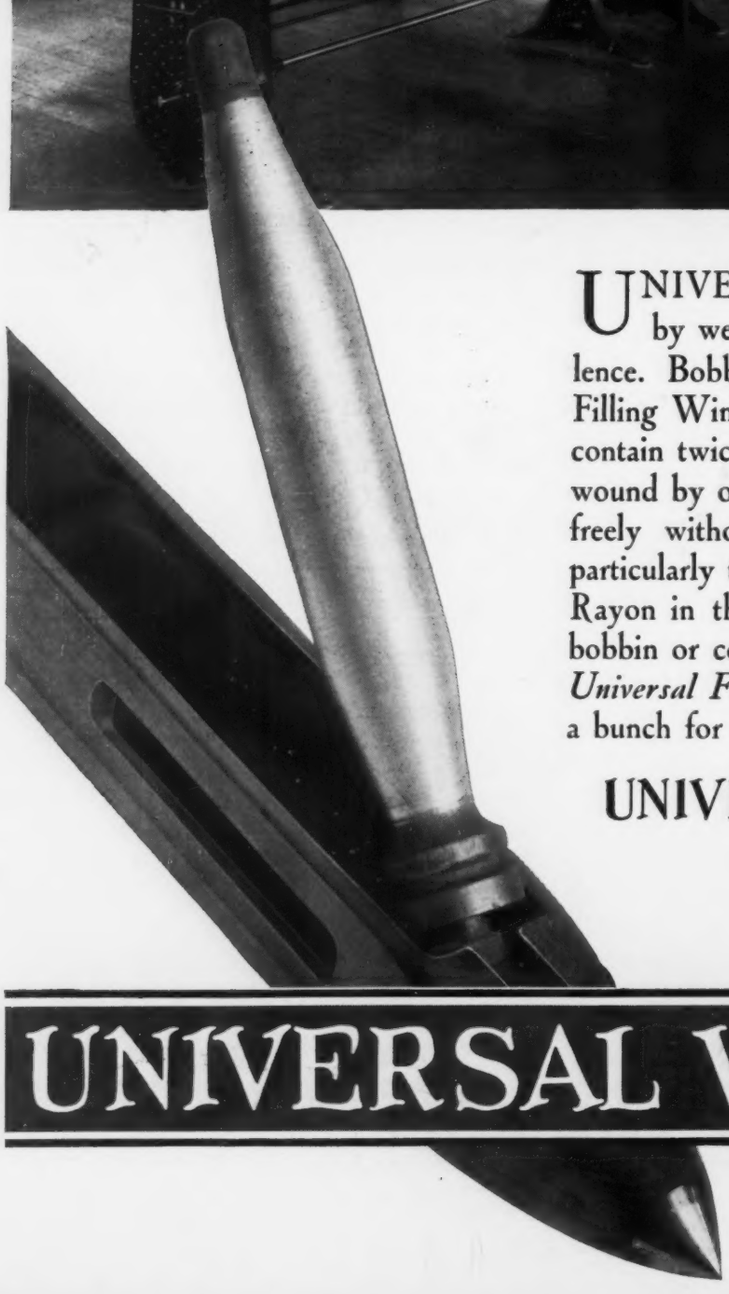
FRANKLIN PROCESS CO., 564 Eddy St., Providence, R. I. Please send me a copy of your portfolio—"What Franklin Process Can Do for You."

SIGNED_____ TITLE_____ BUSINESS_____

COMPANY_____ STREET AND NO._____ CITY_____ STATE_____

Ad No. 273, Printed in U. S. A.

FROM SKEIN TO SHUTTLE IN ONE PROCESS



UNIVERSAL Wound Filling is regarded by weavers as the highest form of excellence. Bobbins or cops wound on the No. 90 Filling Winder are uniform in size and tension, contain twice the volume of similar containers wound by other means, and feed smoothly and freely without sloughing off. This applies particularly to rayon. The weaver who buys Rayon in the skein can wind directly to the bobbin or cop *in one process* on the *No. 90 Universal Filling Winder,* automatically laying a bunch for the loom feeler motion if required.

UNIVERSAL WINDING COMPANY
BOSTON

UNIVERSAL WINDERS

300

turers selling direct than those distributing through jobbers, is the thought of some maintaining relations with both elements. The direct-to-retailer mills, it is suggested, have their organizations keyed to a down-to-the-minute delivery service and hardly will be asked for any improvement in that which they have been giving their trade.

It is regarded timely that hosiery mills which are crippled by strikes are meeting the issue at a time when lessened production is in conformity with the warnings of danger of excess output. How much production is being lost by reason of labor controversies never has been estimated, but in Philadelphia and nearby sections of Philadelphia there has been much idle machinery and no little part-time operation of plants, according to reports from the hosiery workers' union, and this is believed to account in part for overtime operation of numbers of mills. So, it would appear, with all running, say, eight to 12 hours a day, it seems within the bounds of reason that over-expansion has not yet been reached. Any other view might imply that manufacturers of circular knit silk stockings would be in no hurry to go as far with new installation as was intended.

Some comparatively new 300-needle machines which have been idle since the demand for bareleg hose subsided are on the market, the owners intending, it is stated, to replace them with 320- and 340-needle equipment. The fact that the owners found it inexpedient to operate these machines profitably, when the very sheer plain back stockings finished their season with the end of summer, served to raise the question among seamless interests whether it might not be preferable to continue the use of 280-needle machines and coarser for the seamed back. Most of the mills which have returned to the manufacture of mock-fashioned silks report booking about the same volume of business as a year ago, at least two Pennsylvania establishments shipping out capacity production. The two point heel in circular knit hose for a dollar a pair is viewed as a life saver for numbers of units in the seamless industry, or, to be modern, the spiral knit division.

New interest in the spiral knit seems to have been aroused by the announcement of a 300-needle rayon stocking having been developed by the May Hosiery Mills, Burlington, N. C. Described as of low-luster rayon allover, and said to represent the finest gauge of this fiber ever produced on a circular machine, the stocking, it is said, may mark a new era in both rayon and circular knit hose.

Absence of Hosiery Novelties Makes Market Seem Drab

WITH NO INNOVATIONS of moment, and manufacturer and merchant content that staples have not been brought into new competition, the market for hosiery necessarily is quiet and uninteresting. Seldom has it been so devoid of features. Outstanding in the way of novelty is the fancy heel for women's stockings. The single point seems to have passed out, for the time, and there is not much left of the two point, a number of variants, some attractive, many of them an atrocity, having taken its place. The Weber & Friedrich Mill, in Philadelphia, like the Oscar Nebel, at Hatboro, keeps alive the interest in fancy heels by continually presenting new types, each designing the machine attachments by which they are produced.

Windsor Mills, Inc., in Philadelphia, which like the Weber & Friedrich, sells direct to retailers, is another noteworthy success in the development of novelty heels, a strong competitor of which is the French or narrow heel. This later construction in conjunction with the slipper sole has become standard with the Berkshire Knitting Mills as one among a number pushing the French as against the multi-point in black and shadow effect.

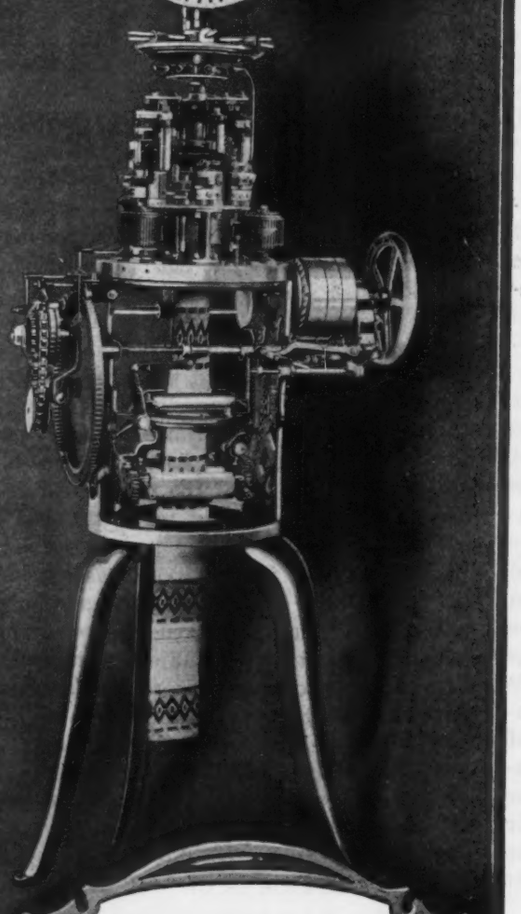
Mesh hose is a probable favorite for the 1930 summer season, and has not been altogether neglected this fall, its sale being confined to a comparatively few stores, however. Mesh stockings proved a failure on the occasion of their last previous introduction in a large way, partly because they were attempted on circular machines which had not been properly constructed, but which since have been perfected. There is a rumor that a mill in Pennsylvania near Philadelphia which recently set up some used machinery, is having it rebuilt and adapted to the production of circular knit net hose of fine gauge lisle, by some preferred to silk, as its equal in appearance and more serviceable.

Although there is no lack of action in children's hosiery, this division of the primary market presents nothing exciting. Bought up pretty well for spring, and the fall season having progressed satisfactorily, juvenile lines are in a between-seasons position. Long and half length stockings, plain and novelty types, have for the time sidetracked anklets, or pullovers, and just now the latter are a subject of interrogation. They were expected to be even more popular next year than in 1929, and there is nothing to raise the suspicion they will not, but merchandise managers in the big stores are reported keeping buyers under surveillance when it comes to contracting for children's stockings for next spring and including a fair proportion of pullovers with fancy tops. So, according to mill agents, last year's creation in the way of short socks is not moving out to the satisfaction of their principals. But there is time aplenty for giving the anklets a push that might send them across for a bigger season than that of this year.

When first jobbers began placing orders for infants' socks for 1930 distribution it appeared that specifications would call for 60 to 70 per cent of the trim little anklets, and there was much elation among a group of manufacturers prepared to annex the lion's share of the business by reason of being specially equipped. Now, it is stated, many of the buyers feel safer in their commitments for the regulation straight and roll top socks, and that where there is doubt in their minds they pass the anklets up. Several leading jobbers who have sounded their trade look for a heavier sale of the shorts next year than that of this year. Preference and prejudice appear sectional in the matter of infants' knitted footwear.

The one satisfactory phase of the situation as to infants' socks and juvenile hose is that representative mills are well supplied with orders and practically all boasting of an improvement over the situation in the

CIRCULAR
BRINTON
KNITTING
MACHINES



The name Brinton, on knitting machines, has come to mean a great deal to plant owners through many years of satisfactory service.

You will find Brinton Knitting Machines in many diversified lines of business, that have been giving continuously satisfactory service for many years.

You cannot do better than equip with Brintons.

Let us send you full information.

H. BRINTON COMPANY
3700 Kensington Avenue
Philadelphia

FOREIGN AGENTS
Great Britain and the Continent: Wildt & Co., Ltd., Leicester, England.
South America: M. Buchsbaum, Calle Alsina 1814 Buenos Aires, Argentine Republic.
Australia: J. H. Butter & Co., Sydney Melbourne.
China and Japan: Elbrook Inc. 50 Peking Road, Shanghai, China.

fall of 1928. As to the baby hose, there is heard less complaint from jobbers and retailers of chain store competition.

Want "Something New" in Men's Socks.

"Show us something new," say buyers of half-hose for large distributors. They have been getting new designs for some time, at frequent intervals, but as they are very much on the conservative side, half-hose trading seems monotonous, in contrast with the action always present during the period of giddy colors and jazz patterns. There is as much variety, and so far as pertains to construction, perhaps more, for Celanese in combination with rayon, silk, and mercerized cotton is making possible some very attractive chaste effects that indicate the field of fancies in men's socks is not in much danger of invasion from plain colors, predictions to the contrary notwithstanding. Since the bulk of the novelty half-hose has been coming from southern mills, a few Pennsylvania establishments are making a drive on high-grade mercerized in plain colors, and are said to be selling capactiy production of good size plants.

Mills in Reading reaching the retail trade with attractive offerings of novelty half-hose in conservative models report having taken a considerable business for the holiday shopping period. Sales were mostly of dollar and 50-cent lines, the former being taken rather freely in the larger cities. The favorite selections in the dollar class were two color stripes on a background of heather mix or oxford, and clocked hose proved especially fetching. While the half-dollar sock stands out as the premier among fancy effects, there is seen a tendency to mass production whereby a very satisfactory type of sock is produced for the 35-cent bracket.

Wool half-hose, notwithstanding an excess of mild weather, has been sold up about as usual, mostly in unostentatious mixtures. It is stated, however, there is a dearth of repeat orders.

Next Knit Goods Drive on Men's Winter Underwear

WITH THE PRIMARY MARKETS for underwear seasonably quiet, there exists among some manufacturers a strong temptation to come out with prices for men's cotton ribbed underwear in advance of the formal opening assumed to have its setting around the first week in January. Only foolishly low prices would cause jobbers to look at offerings this year, in the opinion of mill heads maintaining it would be absurd to expect action.

Leading buyers are said to have been asked for their views as to whether it might not be expedient to stage the opening about two weeks later than that for 1929, and it was the consensus that it were better to have a late opening, with cotton settled, than to try to force the buying with cotton value yet to be determined from crop conditions and indicated stage of consumption. The unsettled situation in the securities market does not enter into the question of an opening date, say manufacturers who are understood to have consulted their trade. It appears, however, that both jobbers and manufacturers feel it would be easier to

establish trading relations if there were assurance the aftermath of the Wall street affair had run its course.

There is seen not the slightest possibility of a general showing of samples and naming of prices until after the turn of the year, but there is fear a few intrepid factors may resort to back door visits in the hope of acquiring a few orders with which to start plants operating early, since they will have ended their 1930 season ahead of schedule.

In the event jobbers have normal distribution for the remaining weeks of the year they will have little if any 1930 underwear on inventory, is the opinion of manufacturers consulting shipping records, and an early opening might go off with a bang. Mills still have some deliveries to be completed, but the amount of goods involved is insignificant. Most of the light weight mills have not booked business as far into next year as ordinarily is the case, jobber procrastination being ascribed to a waiting for the final word as to cotton.

On the Road Early with Sweaters.

While sweaters were formally opened in Chicago on November 21 for the next seasons, many of the mills had their men on the road during the previous week. Some business was taken for women's light weight worsted coats for spring, and it appeared from comments of jobbers looking over samples that plain colors and small designs will be the sweater vogue for the early part of the year. A Philadelphia mill whose sports coats are in wide repute reported booking a few orders after a mill showing of samples to buyers for several of the larger jobbing houses.

Business in sweaters for the current season tapered off quite a little last month, and, cancellations by some of the less important jobbers were reported. The cancellations were not of a disturbing character, manufacturers said, explaining that every year just before the finish of the season some jobbers make selective withdrawals of orders. They place late orders with several mills, to feel better assured of getting deliveries, banking on at least one to send confirmation. This year, it appears, there were few rejections by mills, leaving buyers to recall some of the orders.

Mills will be well started on production of bathing suits during December. Most of them are well supplied with small orders, leaving the bulk of the suits yet to be bought. It is understood in the trade that numbers of lines of bathing suits for 1930 will be knitted of lighter weight worsted and will contain a trifle less fabric, as was indicated when samples first were shown in August.

The Spiral Knit Hosiery Guild To Be Formed.

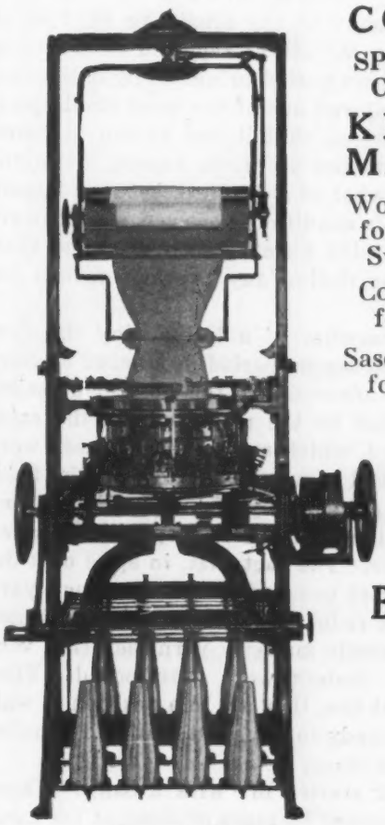
It was recently announced that The Spiral Knit Hosiery Guild—the proposed organization of women's fine gauge spiral knit hosiery manufacturers—will take definite form in the very near future and immediately thereafter begin the more active work of promoting the sale of high quality spiral knit stockings of 300-needle or finer.

Du Pont Dyestuffs.

The E. I. Du Pont De Nemours & Co., Inc., Wilmington, Delaware, recently published a very attractive little pamphlet showing samples of wool and silk dyed with Pontacyl Brilliant Blue E, as well as giving the properties of the dye.

COOPER-KNIT

Knitted goods that are full of life and delightfully springy sell easily. These results can be obtained only by using



New No. *18-20*
Spring Needle Rib Body Machine with Stop Motion

COOPER'S
SPRING NEEDLE CIRCULAR RIB
KNITTING MACHINES

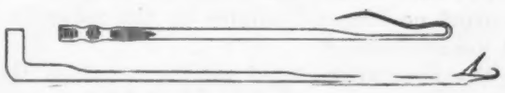
Wool or Worsted for Bathing and Swimming Suits

Cotton, or Wool, for Underwear

Sase, Rayon or Silk for Fine Undergarments

THE MOST BEAUTIFUL FABRIC KNIT ELASTIC AND LONG WEARING

COOPER'S HIGH SPEED LATCH NEEDLES WITH NON-TURNABLE RIVETS



Standards of Accuracy

CHARLES COOPER CO.

Manufacturers of
KNITTING MACHINERY AND SPRING AND LATCH NEEDLES

Bennington, Vermont, U. S. A.

G. H. ROGERS, Traveling Representative, Lockrow Ave., Albany, N. Y.
G. W. MORTON, Southern Representative, 1002 Magnolia St., Greensboro, N. C.
ELBROOK, INC., 50 Peking Road, Shanghai, China, Agents for China and Japan.
M. BUCHSBAUM, Calle Alsina 1814, Buenos Aires, Argentina.

The YARN MARKET

Philadelphia, Pa., November 16, 1929

A BRIEF SUMMARY of the conditions existing in in the yarn market as reported here during the last report period brings to light the fact that the market enjoyed one of the most stable periods, concerning prices, that it had known in sometime. This stabilization of prices caused, as might be expected, somewhat of a deadlock between buyers and sellers. Such a condition, however, was soon removed and more sales were actually recorded than had been the case during any previous month for sometime.

There was somewhat of a lull during the first week of the present report period in number of sales taking place. The decrease in the number of sales, however, was offset by the magnitude of the sales that were recorded, which sales in most cases were very large. Combed yarns seemed to lead the field, as many spinners of combed yarns reported that they had sufficient business booked to keep them engaged for several months. The fact that, in spite of a decrease in the market price of the raw product, yarn prices suffered no reduction, more or less confirmed the statement recently made by yarn men that very few spinners or dealers were overstocked. They clearly pointed out that they are in a position to wait until buyers are ready to buy, and that no reduction in prices will take place.

The next week started off with a bang! There was a very pronounced increase of demand for carded yarns and the demand for combed yarns remained favorable, as had been the case for the past two weeks. For 20s to 30s, inclusive, many local yarn houses advanced their rates for frame spun carded cones in white yarn. The close balance of supplies with demand and the stiff attitude of spinners, being declared as responsible for the advancement in rates. Spot supplies of carded yarns in important counts, such as 20s 2 and 30s 2 carded warps, were reported no longer available by the majority of local yarn houses.

The next week closed out the month of October, and a survey of the business done during the month showed that the volume of combed yarn that changed hands approached record breaking proportions. Many of the largest spinners of the country stated that the volume of new business booked was the best they had received during any month for the past five years. While combed spinners were booking this large amount of business, carded spinners did not fare so well. Their business, however, was not so dull as to be discouraging, as it was not one of the worst months of the year by far.

During the next week it was announced that, becoming effective November 4th, prices of two-ply combed yarns would be advanced. This put prices back to where they were before the reduction of prices of combed yarns took place on September 28th. During the same week an advance of single combed qualities also took place. Many spinners quoting half cent to a full cent more than during the previous week, asserting that the firmness in long staple cotton was the reason for the advance. Sales, however, of both carded and combed yarns, experienced somewhat of a slump compared to the sales of the previous weeks. Still the slump was not large enough to cause a great amount of alarm among spinners and dealers.

The volume of sales continued to be rather low during the next week. Some attributed this to be due to the very noticeable slump in the automobile industry. It was also announced about this time that many of the principal carded yarn spinners in the South were planning drastic curtailment. The curtailment was not deemed necessary on account of any present over supply, but as a guard against such a condition in the future. No doubt such a decision will also tend to stabilize prices.

Philadelphia prices on November 15th follow:

Single Skeins.

4s to 8s	29 @29½	10s	30 @30½
12s	31	14s	31½
16s	32	20s	33½
24s	35½	26s	37
30s	38		

Single Warps.

10s	30½	12s	31 @31½
14s	32	16s	32½
20s	33½ @34	26s	37 @37½
30s	38 @38½		

Two-Ply Skeins.

8s	29½ @30	10s	31 @31½
12s	31½ @32	14s	32½
16s	33	20s	34
24s	36½	26s	37½
30s	39	40s	46

Two-Ply Warps.

10s	32	12s	32½
14s	33	16s	63½
20s	34½ @35	24s	37
26s	38	30s	39 @39½
40s	46½ @47½		

Frame-Spun Carded Yarn on Cones.

8s	29	10s	29½ @30
12s	30½ @31	14s	31½
16s	32	18s	32½
20s	33	22s	33½ @34
24s	34½ @35	26s	35½ @36
30s	37½ @38	40s	44½
30s dbl. carded	40 @40½	30s tying in	35½ @36

Carpet and Upholstery Yarn in Skeins.

8s and 9s 3-4 hard white warp twist	29½ @30
8s tinged tubes	26½ @27
8s 3-4 hard twist waste	26 @26½

Two-Ply Combed Peeler Skeins and Warps.

8s to 16s	44	20s	46 @48
30s	53	40s	55½ @57
50s	60 @61	60s	66 @68
70s	77 @78	80s	88 @90

Mule Spun Carded Yarn on Cones.

10s	34	12s	34½
14s	35	16s	35½
18s	36	20s	36½
24s	38	26s	39
30s	40	40s	48

Single Combed Peeler Yarn on Cones.

18s	41½	24s	45
30s	49½	36s	51½
38s	52½	40s	53½
50s	60	60s	66
70s	77	80s	88

Mule Spun Combed Peeler Yarn on Cones.

10s	44	12s	45
14s	46	16s	47
18s	48	20s	50
22s	51	26s	52
28s	53	30s	54
36s	57	38s	59
40s	60		

Texas Meeting Report.

(*Continued from page* 127.)

tion "What are size compounds for? Why are they used and how do we determine their real merit?"

This subject, as was to be expected, opened up quite a wide field of argument between those who prefer to prepare their own sizing compound, and those who find it better to purchase prepared compounds for sizing. This question is one which has been discussed and argued back and forth time after time. The subject was brought up by Hugh S. Clarke, who said that he was honest in making the inquiry, because he had found in visiting from one mill to another that one man would "swear by" one particular sizing compound, while another would declare that a different one was the only one to use. Then he said he is somewhat harassed by different size compound salesmen, who declare that their product is the salvation of his mill. He pointed out that in his particular case, he had found it best to prepare his own sizing compound. He stated that he uses paraffin wax for lubricating the yarn, and that he is somewhat confused by all of the talk about Irish moss, Japan wax, etc., etc., which he did not understand. He said if there was a genuine reason for using a prepared compound he would like to know about it, but until someone offered him definite proof and gave him particular reasons, he was going to stick to the home-made product.

J. R. Wikle, while not answering the question directly, indicated that he had found a wide difference in the efficiency of different compounds, because he said that he had been able with 12 pounds of one compound in his size mix, to produce equal results to those secured when using 30 pounds of another compound.

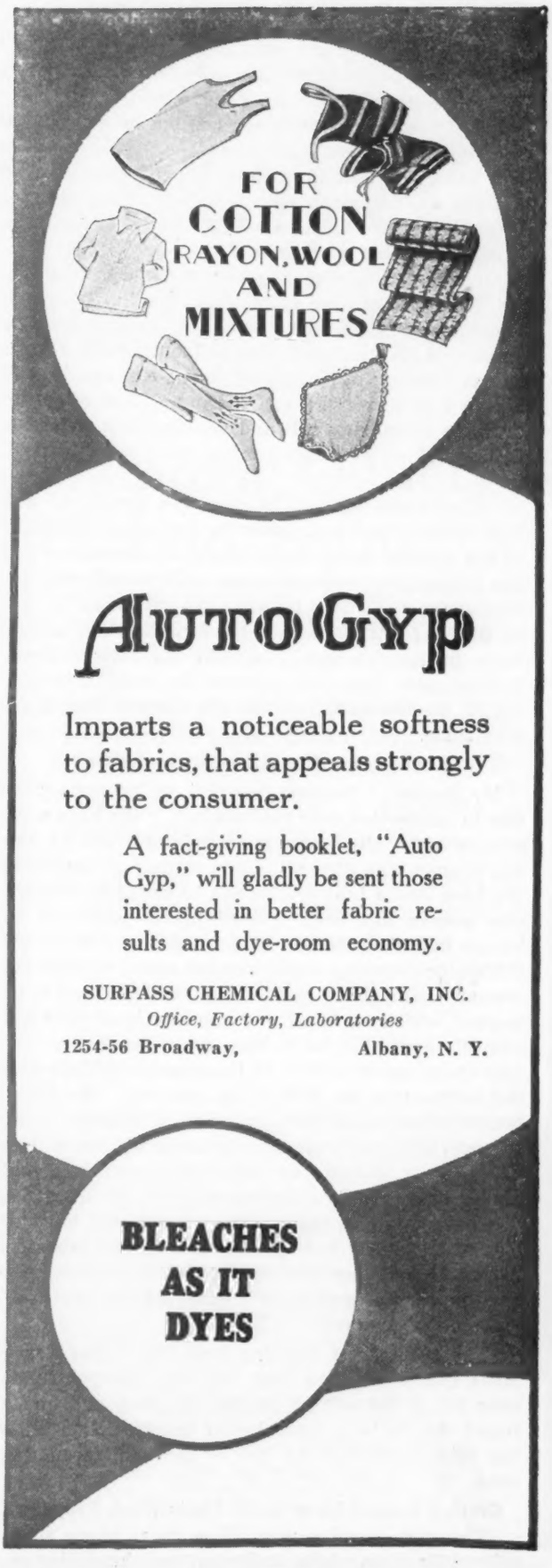
It developed, in a vote taken in the meeting, that about 75 per cent of those voting use a purchased compound, while the remaining 25 per cent seem to prepare their own compounds at their plants. Grover C. Dilling, of West, Texas, said, "I can manufacture my compound considerably cheaper than I can buy it, but I can't get the same results. It is a settled fact that over 90 per cent of the mills in this country buy their compounds. You get a more uniform product when you do this. Some mills might be able to get a better product with compounds which they make themselves, but 95 per cent of the mills buy their compounds and that is a pretty good argument."

Variation in Run-Outs on Section Beams.

"What variation in run-outs on sections beams do you get, and how can this variation be reduced?" was the next question submitted by the chairman for discussion.

Mr. Wikle reported that his runs four beams to the set, and gets about a half pound of soft waste to the beam.

It does not make much difference whether you figure it on the beam or several beams, according to Mr. Poole, as there will be considerable variation found on each beam. Claude A. Mast, superintendent, Itasca Cotton Manufacturing Company, said


FOR
COTTON
RAYON, WOOL
AND
MIXTURES
AUTO GYP
Imparts a noticeable softness to fabrics, that appeals strongly to the consumer.
A fact-giving booklet, "Auto Gyp," will gladly be sent those interested in better fabric results and dye-room economy.
SURPASS CHEMICAL COMPANY, INC.
Office, Factory, Laboratories
1254-56 Broadway, Albany, N. Y.
BLEACHES AS IT DYES

that by the use of yardage clocks and by calibrating each warper, he has been able to reduce his variation in run-outs on the slasher considerably.

"We run two beams to the set of spools," reported W. F. Smith of Mexia, "with 10,500 yards to the beam. The beams which are run on the start of the spools are all right, but when the spools begin to run down, we find that there is a difference in the tension on the measuring roll, and when the roll comes up to take up the slack, we find that the measuring roll keeps on turning."

Ingram Lee said that "we have found that making a test on 25 sets, we have about 3-4ths of a pound waste to the beam, soft waste. We used to have the same trouble that Mr. Smith mentions about the beams running out unevenly, but we found that by taking a small weight, and putting a piece of leather over the measuring roll and hanging this weight on it, it would make the measuring roll stop more readily."

"I once ran some tests about the variation," said J. R. Wikle, "and by numbering the beams according to the warper which made them, we discovered that one warper was making beams which were considerably shorter than the others. We varnished the roll on this one warper, and it helped us a lot by making these beams run out even with the rest of them." Several other men also reported the practice of numbering the beams to indicate the warper from which they come.

Having One Hand Do All the Setting.

Mr. Burow of Bonham reported an interesting system in connection with this subject. "We have a system by which the beams are numbered, and we have one woman who does all of the setting of the clocks. We have found that no two can be set alike, and this one woman has been trained pretty well and she knows just about where to set each one. When this difficulty shows up in the slasher room, we take this woman in and show her the beam, and she goes to the warper which made it, and she has been very successful in helping us to keep down our waste. We also check up on her as to the number of laps from the warpers on the back of the slashers. We have a board which shows this, on each set, and you would be surprised just how much better work you will get off of your warpers by instaling a system of this kind. This is a very important point, because when you have waste at this point, you not only have the loss of the stock, but also the loss of the labor employed in bringing the yarn up to this point. Our hard and soft waste runs around .34 per cent, on a six-months' average."

The overseer of weaving from the Dallas Textile Mills likewise stated that his head warper tender does all of the setting on the warpers, and he has found this to be a much better practice than allowing this to be done by two or three different persons.

Getting Loom Fixers to Do Their Work Properly.

The next question was, "How many looms should a loom fixer maintain, and what are the duties of a loom fixer?"

Grover C. Dilling said he did not believe this was a fair question, because it depended upon so many different factors. He said he did not believe it would be possible ever to establish any given number of looms which a loom fixer might maintain, or to say just what his duties are. Hugh S. Clarke stated that he had asked this question, in an honest effort to determine just what a loom fixer should do. He expressed it as his opinion that in many cases the average loom fixer is given too many looms, and he believed that the number of looms to the loom fixer should be cut down. He said that he had tried this and that it had worked out beautifully in his case, and that his supply bill had been cut down, and that his work had improved, and that his fixers were better satisfied.

He expressed the opinion that the overseer or superintendent should cultivate the loom fixers, and impress upon them that they are the "whole cheese" so far as their section is concerned. He said that, instead of loading up a loom fixer with the maximum number of looms he could take care of in a day's time, he had found it better to assign a smaller number of looms to each man, and allow him more time to study his job and anticipate trouble, rather than wait until a flag came up to indicate that a loom had stopped. Mr. Clarke believed it much better for the loom fixer to have time to prevent trouble rather than have to correct it after it had occurred on account of his not being able, or interested enough to stay on top of his job and keep things in good working order before trouble occurs. In addition to permitting him to have time to do this work, Mr. Clarke declared that it is the responsibility of his superior to impress upon him the importance of preventing trouble and to awaken in him an interest in the work.

There were a number of men who expressed the opinion that the average loom fixer does not do as much work as he should, compared with men on similar jobs in the other departments of the mill. All of the discussions seemed to indicate it as the general concensus of opinion that in this case, as in most any other kind of work, if the man could be awakened to an interest in his job, and given time to make the necessary preliminary investigations and inspections, everyone would be more satisfied.

Gives Premium for Low Seconds.

J. R. Wikle reported that to give his loom fixers an incentive for keeping their sections in better condition, he pays a weekly premium to those loom fixers whose sections produce less than 5 per cent seconds; a higher premium to those who are within 4 per cent; a still larger amount to those who do not make over 3 per cent seconds; and so on; with the highest premium being paid to the man who operates a section with the smallest percentage of seconds.

I. G. Moore brought out the point that in the carding and spinning departments very little "flagging" is done, and suggested that less flagging in the weave room might have a good psychological effect upon the fixer. This discussion concluded the first session of the convention, which was held on Friday

evening. The discussion of practical questions was resumed on Saturday morning.

The Multiple System in Weaving.

Apparently, the idea of giving weavers more looms, with the use of battery hands to fill the batteries, has not been applied generally in Texas mills, according to the discussion of the first question brought up on Saturday morning, which read, "How many of us have given the so-called multiple system a thorough try-out?"

The first man to report on this was J. R. Wikle, of the Magnolia Cotton Mills, Magnolia, Arkansas. Mr. Wikle manufactures 100 x 60 broadcloth, with 32s warp and 42s filling. He said that he has battery hands which take care of 56 looms, and that, whereas in North Carolina, with the multiple system, we had weavers running 14 looms on this construction, we now have them running 18 and 20 looms.

"In my opinion, the biggest mistake that most mills make in connection with the system, when it does not prove out satisfactory, is that they try to give too many looms to the weaver, instead of figuring out what would be a medium day's work." Mr. Wikle says that he pays for weaving and battery filling by the pick.

Mr. Burow and J. G. Coman, superintendent, Mexia Textile Mills, both brought out that with different kinds of filling, battery hands might have a tendency to become careless and get the filling mixed, which would cause difficulties that would offset any advantage to be gained by weavers running a larger number of looms. Mr. Wikle explained that while at the present time he is on only one number of filling, 42s, and does not have this difficulty, that at the Eastside Mill in Shelby, N. C., he had seen the use of battery hands in making dobbies and other fancies.

D. H. Poole reported that he had made a rather extended test with the system, on 36- and 40-inch, 10, 11 and 12-ounce duck. He furnished battery hands and gave the weavers 24 looms apiece, but after a number of months, he found that this was not practicable in his case, and that his seconds increased 3 to 4 per cent, and his production decreased about 5 to 8 per cent. He said when he put the weavers back to running 12 looms, normal conditions as to seconds and production was restored. Mr. Wikle pointed out that of course seconds would increase and production decrease at first. However, he said that he is running broadcloth with seconds around 6 per cent, and 92 per cent actual production on a day and night run, and that he is entirely pleased with the proposition.

Ingram Lee, of the Dallas Textile Mills, had an experience similar to that of Mr. Poole, but expressed the belief that possibly he had given too many looms to the weaver in his first experience. He said that, while he endeavored to group the different constructions of goods, still he had found a difficulty in getting the battery hands to insert the proper size of filling in the batteries, when they carried it around in aprons.

Mr. Wikle said that his battery hands do not use aprons. He has provided them with small trucks,

Spinning Quality Into Yarns

Quissett's modern and efficient mechanical facilities for spinning yarns are necessities.

Of much more importance to the textile man, however, is the interest and utmost care exercised by Quissett workers throughout every process.

It is this human control that maintains the uniform high standard of Quissett Yarns . . . the element that adds confidence . . . the assurance of satisfaction . . . as an inherent, intangible value.

Carded and Combed Cotton Yarns in all numbers and Descriptions.

Ply Yarns our Specialty.

Egyptians, Sea Island, Peelers, Sakelarides, Pimas, and Peruvians.

Quissett Mill

New Bedford, Mass.

Wm. H. Butler, Pres.
Edward H. Cook, Treas.
Thomas F. Glennon, Agent

about 8 x 18 inches, in which the filling boxes are put. He added that this relieves some of the strain on the battery hands when it is necessary to carry a large amount of filling.

Mr. Thomas, overseer of weaving at the Gaudulupe Valley Cotton Mills at Cuero, Texas, reported that they had had good experience with the multiple system on 3.50 Osnaburg and 16-ounce ducks, with 6 to 8 different kinds of filling. He said that his weavers run 24 looms and his battery hands take care of 24 looms, and that the battery hands are paid by the piece. He said, however, that at first they did have quite a bit of trouble with mixed filling. With the system, he said that his production is just as good, and that they make no more seconds than formerly.

J. G. Coman of Mexia said he had tried the proposition out on a night run about two years ago, but did not find it satisfactory. P. J. Long of Bonham, said they had made a brief experiment on shuttle-changing looms, and had not found it practicable in such a case.

It was brought out that it had been determined that a weaver could take care of 300 loom stops per day. Mr. Wikle, however, speaking again on the subject, expressed the opinion that it would be a mistake to expect weavers to handle this number regularly. He said he had found it much more satisfactory, and successful, to assign considerably less than those requirements to a weaver." "Another mistake", he said, "is that many mills will make their tests and experiments upon the basis of what the best weaver can do, and then seem to expect the other weavers to measure up to that. It is my idea that it would be better to take an average weaver and base your requirements on his work, as that will keep everybody satisfied."

"Unless there is a saving to the mill and an increase in pay for the weaver, the multiple system will not be successful," said Mr. Poole.

"It is both in our case," said Mr. Wikle. "I don't think it is fair unless both conditions prevail."

Mr. Burow pointed out that usually in experimenting with the multiple system, mills go as far back as the opening room in creating better conditions to reduce the warp end breakage, and that this was a benefit. Mr. Poole agreed with this, stating that when he was experimenting with the system, by improving the quality of his yarn, he had been able to get his loom stops down to less than one stop per loom per hour.

Repairing Pitman and Treadle Rolls.

The next discussion was devoted to means by which different mills had been able to improve the operation of their looms, and each member was asked to tell of any "kinks" or method by which he had been able to achieve better results and more economy.

"We had a lot of old crank shafts which we cut up into rolls," reported Hugh S. Clarke. "And as these were made of cold rolled steel, we used them for Pitman rolls and treadle rolls, by machining them and case-hardening them. They have been running for over two years and they look like new. As you know, the treadle rolls that come from the shop are rough, and we have found that by using scrapped shafting, we get splendid economy and results, and they will last forever. The same thing is true of the Pitman rolls."

"We have been able to do a lot of good by using a heavy paper tube on the cloth rolls for preventing rust on the ends of the cloth," said J. R. Wikle of Magnolia. "We made them an inch shorter than the roll, so they would not wear out so quickly. Now we never have any trouble with rust on the cloth from this cause."

Methods of Conditioning Filling.

Ingram Lee suggested that the chairman get Hugh S. Clarke to tell of a filling conditioner which he devised, and then proceeded to tell of one he had rigged up at his own mill. "We took our filling boxes and put a false or double bottom in them, about 4 inches high, and ran a horse-shoe shaped pipe in there with an outlet at the end of the box. We use this on our finer filling, and run the filling out to the boiler room and, after throwing a piece of heavy duck over the box, apply steam to the outlet in this type. We have found that we have practically eliminated kinking on our 23s filling by this method."

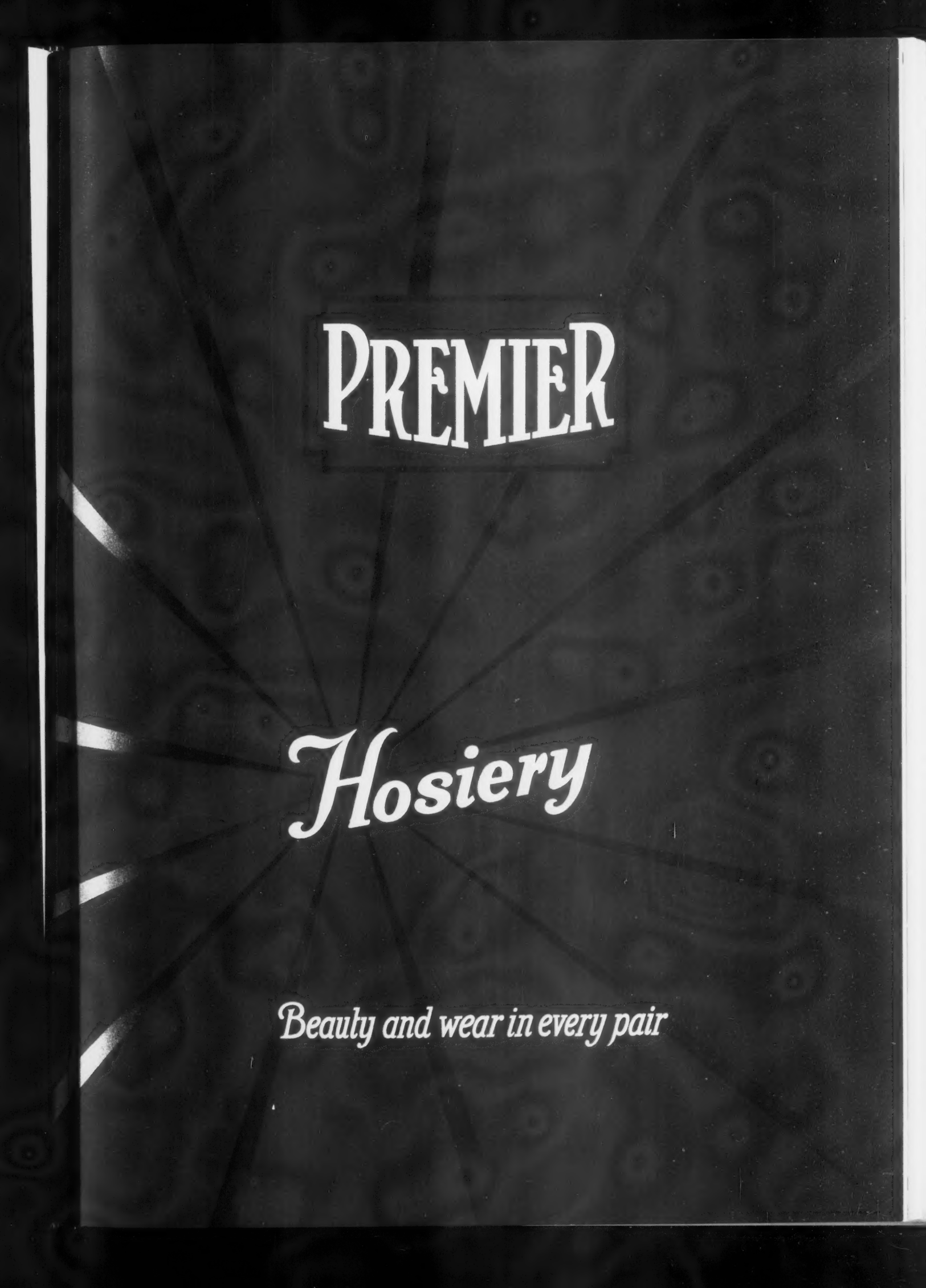
Mr. Clarke was called upon to explain his system, and said that, "We wanted to condition our filling, but the steaming process would loose the shellac and cause considerable trouble. We have built our filling boxes out of scrap angle iron as a frame, covered with hardware cloth (similar to that used on picker screens) on all sides and the ends. Then we built a little oven large enough for one box, and took two turbo heads which go on the side of the box when it is run into the oven. In this oven we maintain from 95 to 98 per cent relative humidity, and keep the filling in there for about two hours. This system does not affect the finish on the quills. We have some that are oiled, and some that are shellacked.

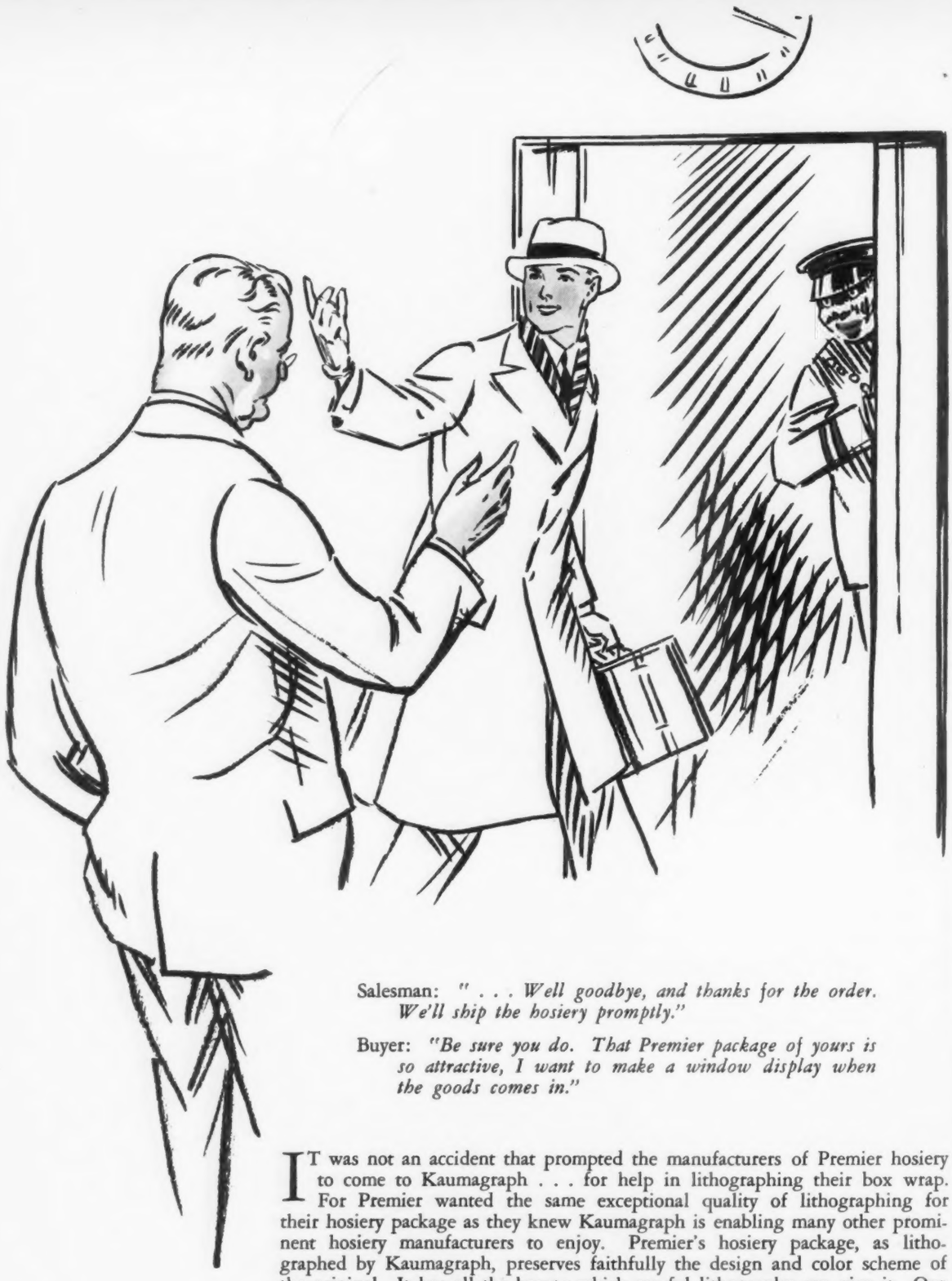
"By conditioning the filling in this manner, we were enabled to insert six teeth of twist in the filling, which of course gave us a stronger cloth and better running work with less breakage. Also, on our white-back denims, it eliminated a lot of those little white neps on the face of the cloth and made the cloth much smoother and more even. I think it works very successfully, and I do know that it eliminated the problem we did have with steaming the bobbins—that of loosening the shellac on them."

Methods of Inspection.

Mr. Clarke mentioned at this time that his overseer of weaving has an interesting system of inspection of supplies, and asked him to report on this.

T. E. Niles, overseer of weaving at the Miller Cotton Mills, Waco, Texas, responded to Mr. Clarke's request. "It is a very old system, one I have used for some time," said Mr. Niles. But it has been my observation that most overseers, when a piece or part is issued out, never make any effort to check up on it to see where it goes and whether it is properly applied. They simply know that it is in the room, and


PREMIER
Hosiery
Beauty and wear in every pair



Salesman: *" . . . Well goodbye, and thanks for the order. We'll ship the hosiery promptly."*

Buyer: *"Be sure you do. That Premier package of yours is so attractive, I want to make a window display when the goods comes in."*

IT was not an accident that prompted the manufacturers of Premier hosiery to come to Kaumagraph . . . for help in lithographing their box wrap. For Premier wanted the same exceptional quality of lithographing for their hosiery package as they knew Kaumagraph is enabling many other prominent hosiery manufacturers to enjoy. Premier's hosiery package, as lithographed by Kaumagraph, preserves faithfully the design and color scheme of the original. It has all the beauty which careful lithography can give it. Our Lithographic Department is ready to help you on *your* lithographic requirements . . . whether it is the faithful reproduction of your present packing . . . or assistance in the design of new packing that "packs a sales appeal."

KAUMAGRAPH COMPANY . . 200 Varick Street . . New York City

Boston, Chicago, Philadelphia, Charlotte, N. C., Chattanooga, Tenn., Los Angeles, Cal., Paris, Ont., Paris, France.

that is all, they do not check up on it like they should.

"Take our shuttles for instance. We let a loom fixer have a shuttle, and make a record of the loom for which it is secured, the date, etc. This is entered on a small sheet which the head loom fixer has, and then the loom fixer puts the shuttle in. Then, in a couple of days, the head loom fixer makes it his duty to make an inspection of this shuttle in the loom. If it is satisfactory, he okehs this slip, and turns it over to me, and then I make an inspection myself to see that the shuttle is going all right.

"This cut our shuttle bill down considerably, so it occurred to me that if this works so well in connection with shuttles it would work all right on other parts. Now, therefore, if we don't put in anything but a picker head, or a harness strap or a jack strap, our head loom fixer keeps a copy of the slip and checks up on it just like he does on the shuttle, and when he is satisfied that it has been put in and is running correctly, he okehs the slip and turns it over to me and I make the same kind of an inspection.

"I find that this has cut our supply bill down very materially, about one to three dollars per week per fixer."

Mr. Clarke said that he had followed up on this, behind Mr. Niles, and found that where 18 months ago they had a standing order for 150 shuttles a month, they now use only 30 to 35 shuttles a month, and added that his total weave room supply bill has been cut down 38 per cent.

"I know from experience that when a part breaks and a new one is put in, the average man does not pay any further attention to it, nor does he make any effort to determine whether the thing that caused the original part to break was corrected before the new part was put in," declared Mr. Burow. "I know that one time I very nearly lost my job because of the head end of a frame where we had a split horse-head. We replaced it three times in one day, and found out the trouble was that when the frame got up to speed there was such a strain on the gears that it pushed them apart and caused the trouble. A man should find out what causes the trouble, and remedy it before he puts the new part in, and then he should check up to see that the new part is working properly.

"We have a system whereby the overseer himself signs all requisitions that go out for new supplies, and the old parts are brought to him so that he can check over them. No one else issues requisitions for new parts. In this way the overseer knows what is going on, and he is held responsible for the operation of his room."

"Our master mechanic worked out something that has meant a great deal to us," reported J. G. Coman of Mexia. "On our crank-shaft boxes, if they got loose, we would have a broken crank-shaft, and that is more or less expensive. We got our master mechanic a reamer, and now when the loom fixers find a crank-shaft box that is worn, they take it out and take it over to the shop, and he planes it down and reams it out. We have found that we can ream these out several times.

"In regard to the shuttles, we have a shuttle-board, which is placed in the supply room, and when a shuttle is taken out, the supply man puts down the date opposite the loom number, etc. The old shuttle is brought back. In this way, we keep a check on what causes the shuttle breakage. The date is stamped in the new shuttle, with the number of the loom on it. At the end of the month we take these lists up, and the overseer inspects each shuttle."

Mr. Niles pointed out that he would prefer to have an inspection made immediately after the shuttle is put in the loom, because the loom might be out of fix and an immediate inspection would allow the head loom fixer to catch it.

"What has been the experience of other mills on the use of raw hide or Bondaron check straps?" asked Mr. Wikle. "We have had good success with these. I used to buy oak check straps every other week, but these new ones we put on last May, and they haven't broken yet, any of them. We also use this same material on harness straps instead of slab leather."

At this point, the discussion was interrupted and the chairman introduced Vassar Woolley, vice-president of the Seydel-Woolley Company, of Atlanta, who spoke on the subject of preparing size for warps. Mr. Woolley's remarks, and the discussion on the subject which followed them, will be found on page 120 of this issue of COTTON.

The Use of Steel Heddles.

The practical discussion was resumed, following Mr. Woolley's paper, with consideration of the new type of steel heddle. Experiences with this equipment were requested.

"We use a full equipment of Duplex steel heddle, and like them very well," reported Mr. Wikle. "The only trouble that we have had with them is the little rod that holds the heddle, which we find will wear out and break. It makes it necessary for a loom fixer to run a ribbon through and put a new rod in. With these harness, the weaver can find an end much better than with cotton harness. As to their life, I have never had one to wear out, and I have seen them used in North Carolina for ten years."

"We would not use anything else, we have been on them for six years," said C. A. Mast of Itasca. Mr. Dean of San Antonio also said that his whole mill is on steel heddles, and that he finds them to be quite a saving on coarse yarn.

"We have had steel heddles for about six years," said Grover C. Dilling, "and on a day and night run, the original heddles are still good." Ingram Lee said they had about 100 sets of steel harness on standard drill constructions, and that he has had no difficulty with rust.

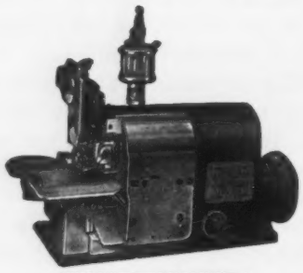
James Clarke said that by the use of two center braces, the trouble reported by Mr. Wikle could be eliminated. He said that his up-keep on steel heddles figures about 8 cents per frame per year. "Our mill is fully equipped," said Mr. Coman, "and these have been running for about four years. We are very much pleased with the results."

MERROW

REG. U. S. PAT. OFF.

HIGH SPEED TRIMMING AND OVERSEAMING, OVEREDGING AND SHELL STITCH MACHINES FOR USE ON KNITTED AND WOVEN FABRICS OF ALL KINDS

———200 VARIETIES FOR 200 PURPOSES———



CLASS 60 MACHINE

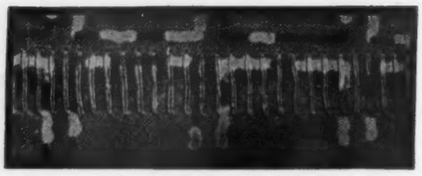
INQUIRE ABOUT NEW MERROW MACHINES

STYLES 60-ABB and 60-D3B

For simultaneously trimming and joining ends of cotton, silk or woolen piece goods with a

FLAT BUTTED SEAM

Permits goods to pass through finishing machines, uninterrupted, for such operations as Shearing, Calendering, Mercerizing, Bleaching, Dyeing and Printing—with *remarkable saving*—both in labor and fabric.



Butted Seam, natural size, made by STYLE 60 ABB MACHINE on Cotton Goods which have been subsequently processed. The STYLE 60 D3B makes a similar though much wider seam designed for use on sleazy or loosely woven goods to insure holding.

OTHER RECENT DEVELOPMENTS—FOR THE RAYON TRADE

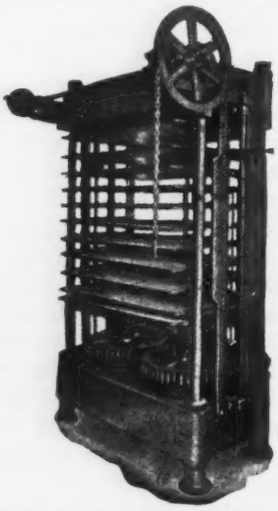
STYLE 60 RD —For a three-thread overedge finish, either straight or scalloped, on Rayon Bedspreads and other sleazy articles on which the ordinary edge finish will not hold.

STYLE 60 JDC —For two-thread FLAT SEAMING on Rayon Underwear.

Let Us Demonstrate the Work of These and Other Machines on Your Own Fabric.

THE MERROW MACHINE COMPANY

16 LAUREL STREET, HARTFORD, CONN.



RELIANCE

Hot Plate Screw Press

FOR

Hosiery and Underwear

Write for Catalog and Prices

Reliance Machine Works

FRANKFORD, PHILA.

FELT

For all Mechanical Purposes

Slashers and Roller Cloth for Cotton Mills.
Felt wicks and washers for
FULL FASHION HOSIERY MILLS
Felt Sets for TEMCO Electric Heaters
Complete stock for immediate delivery

Samples and Prices Upon Request.

FIDELITY FELT COMPANY

Pike St. & Rising Sun Ave., Phila., Pa.

Angle Steel Equipment

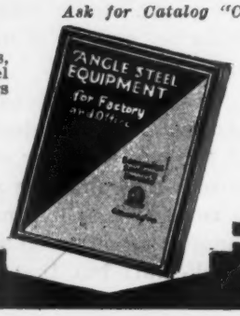
for Factory, Shop and Office

Ask for Catalog "C-O"

Knitters' Benches, Tables, Boxes, etc.—Angle and Sheet Steel Stools—Chairs—Desks—Bench Legs —Cabinets—Trucks.

Agents and Dealers in all Principal Cities

ANGLE STEEL STOOL CO.
Plainwell, Mich.



Send for Catalog

Power Consumption of Clean and Dirty Looms.

The members were asked to make actual tests to determine exactly the horse power consumed by looms, comparing the power consumption of a clean loom against that of a dirty loom. Hugh Clarke replied to this, stating that he had taken a Western Electric indicating wattmeter, and applied it right after a loom had been cleaned, and found that the horse power consumption was .33. He left the meter or until the loom became dirty, and found that the consumption was .43. He said his calculations on the basis of these figures would indicate a saving of about $750 a year on his 300 looms, by keeping the looms clean.

End Breakage Tests on Spinning.

The next discussion was with reference to end breakage on spinning and roving, with the causes therefor. Mr. Wikle said on his work he had found an average of 40 ends down per 1,000 spindles per hour. Reporting on 9.50s yarn, warp, Mr. Coman said that using Strict Good Ordinary cotton, with a front roll speed of 142 r.p,m, he had found his end breakage to be 49.9 ends down per 1,000 spindles per hour. On the same yarn, made of Strict Middling cotton, and running 182 r.p.m. on the front roll, his end breakage averaged 52.5 ends down per 1,000 spindles per hour. Hugh S. Clarke reported 38 ends down per 1,000 spindles per hour on 8 1-2 and 9 1-2 yarn made from low middling cotton.

Herbert A. Burow reported that most of his end breakage, or at least by far the greatest single percentage, came from flying lint, etc. He reported 48 ends down per 1,000 spindles per hour. As to roving frames, Mr. Burow reported 6.6 ends down per hour per 100 spindles.

In connection with the end breakage, Mr. Clarke expressed the opinion that they were not very comparable on account of the great variation which exists in the cotton staple this year. He also stated that this undoubtedly contributed materially to the large amount of flying lint commented upon by Mr. Burow.

Causes of Seconds.

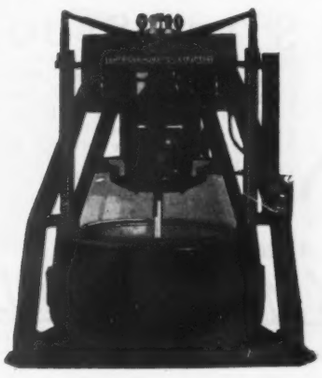
The final discussion of the meeting was based upon this question, "What causes most of your seconds and what are you doing to prevent them?"

"We have a sheet that has each loom number on it, and every day we put down the number of seconds that came from each loom," said Mr. Wikle. "We post this every day, and so each weaver knows just what he is doing in comparison with the work of the others.

Also, we have another sheet that shows the causes of seconds, and each day we know how many yards are made from each cause. We have these sheets posted in the weave room, which is next to the cloth room, and in the case of a shuttle mark for instance, when an inspector finds it, she comes in and marks down shuttle mark under the heading provided for that purpose, showing the loom number. Then we are able to catch this right away, because the fixers keep an eye on this board.

"As stated last night, I pay a premium as to

KARL LIEBERKNECHT
Full Fashioned
HOSIERY MACHINES
Are Known for
Speed When Needed—
Quality Production Always
(*The Machines Confirm It*)
Manufactured by
KARL LIEBERKNECHT, Oberlungwitz, Saxony
(In Any Desirable Gauge and Number of Sections)
Imported and sold exclusively by
LOUIS HIRSCH TEXTILE MACHINES, Inc.
47 W. 34th St., New York, N. Y.
Lieberknecht Hosiery Machines have been made by KARL LIEBERKNECHT, Oberlungwitz, Saxony, continuously since 1873



. . . with a basket as smooth as silk!
FOR extracting fine goods, the Humatic Hydro Extractor is furnished with a "silk finished" basket, as smooth as the finest silk. No roughening or pulling of fibres in hosiery, skeins or piece goods. This is but one of the many refinements found only in the Humatic. Write for details.
The American Laundry Machinery Co.
Specialty Dept. C CINCINNATI, OHIO
THE CANADIAN LAUNDRY MACHINERY COMPANY, Ltd.
47-93 Sterling Road, Toronto 3, Ont., Can.

Stripper X

rthocen

Stripper X for Celanese Yarn

Celanese is stripped to a pure white regardless of the shade by the **Stripper X** method. Send us your dye yarns and we will strip and forward formula.

American Aniline & Extract Company, Inc.
SINCE 1898

Dyestuffs of Quality

141 North Front Street, Philadelphia
Sole Manufacturers of rthocen

Chemicals of Originality

Automatic—Adjustable STEEL STOOLS

Easily raised to any desired height . . . *in one second!* Simply lift up on seat and it locks in place! Three and four legged styles . . . with or without comfortable back rest and adjustable foot rest. Choice of 20 models! Finest steel. Attractive finish.

New Catalog on Request

VITEK MANUFACTURING CO.
Dept. 103 Omaha, Nebr.

S. L. DIGGLE MANAGER — ACME SALES CO. — CHARLOTTE N. CAROLINA

SINGLE or PLY
Natural---Gassed---Dyed---Bleached
MERCERIZED YARNS
All Counts and Descriptions for the Knitting, Weaving and Converting Trade

DIXIE MERCERIZED YARNS

Demand Perfect Inspection
with our
EXPANDING INSPECTING MACHINE
For Seamless and Full Fashioned Hosiery
LEARN TO HATE DYED MENDERS. Edward R. Ammon, Reading, Pa.

Weimar Bros.
Phone Connections
Works: 2046-48 Amber Street
PHILADELPHIA, PA.

MANUFACTURERS OF
Cotton Mercerized Tapes, Spool Tapes, Bindings and Narrow Fabrics for Underwear and other Trades.

the amount of seconds. I think this is a real help in cutting down our seconds. As to the main causes of our seconds, they are necessarily higher from pick-outs, due to the high sley of our goods. We have to pick and clean our harness every day."

Called upon to explain what he does to keep seconds down, Mr. Poole said, "I have a devil of a time to keep them from running away from me. We classify our seconds, and our experience is that oil causes more of our seconds than any other one thing. It is a nightmare with me. Some of it comes from the card room, some of it from the clearers from the drawing, and all the way through. Out of our total seconds, 22 per cent are seconds caused from oil, and most of it is oil flyings, gouts, waste, etc."

"We have eliminated a great deal of our trouble in that direction by bearing down on our oilers and preventing the use of too much oil, and as the result our oil bill is less than half of what it used to be," said Mr. Burow. "Sometimes they put too much oil on the outside of the bearing and sometimes they put more than is needed on the inside. Most of our seconds are caused by drawbacks, pick-outs, and gouts."

"We cut out a big percentage of our seconds by blowing out our card room bobbins regularly," said James Clarke of Guthrie, Oklahoma.

Mr. Poole said that he had done all of this, and still had trouble with oil. He said, however, that the character of his grading and classification might have some bearing upon the number of his seconds.

Bearing down on the oilers helps a whole lot, according to T. E. Niles. "We found that a great deal of our trouble resulted from the loom cleaners blowing off the looms with air when a warp is out. We try not to get any more oil on the loom than it needs, but just the same there will be some of it that will run out, so we have our loom cleaners go over the looms with a cotton brush before they blow them off, and we have cut out a lot of our oil in that way.

"Our head fixer and I go up and down the alleys and look for anything that might cause trouble, and we have a fellow who helps the head fixer do this. We have a special seconds report on which is shown all the defects that might occur, and in case any of the things get by us, the cloth room man catches it."

Ingram Lee reported that about 25 per cent of the seconds at the Dallas Textile Mills came from thin places and about 15 per cent from thick places, with 12 per cent being attributed to oil spots. He said, however, that over half of his looms have the chain let-off, which was responsible for a good many of the thick and thin places, he suspected.

Percy Long reported that at Bonham they have a system of reports in the cloth room, showing the different defects on the different looms, and he said the second hand comes around and collects up these tickets and goes back and looks over the trouble. He said the chain let-off causes quite a number of his thin place seconds. Too much humidity, he said, will cause this let-off to stick.

Mr. Burow said that one big point which he took

BONE-DRY UNSHRINKABLE WELL-FINISHED

HARD MAPLE HOSIERY BOARDS

Give you that much desired finish that cannot be obtained from any other than wooden boards.

You get the length, lustre, *feel* that the goods should have.

Our special finish is highly recommended for silk and chiffon hosiery.

We serve the best mills—send a request for list and same will be forthcoming.

JOSEPH T. PEARSON & SON CO.
Manufacturers
Kensington and E. Boston Avenues
PHILADELPHIA, PENNA.

WHEN YOU PAY *for* 1st QUALITY PROCESSED RAYON YARNS *you don't want second quality*

No reputable processor of rayon yarns would deliberately do this. In fact we don't say this is a practice of any processor. But we do know that improper processing makes a first quality yarn mediocre.

It requires more than just a tub and dryer to correctly process rayon yarns. In buying yarns be sure you deal with a house that has the facilities, the men and the experience to give you first quality yarn when you pay for it. Let The Yarns Corporation of America solve your problems.

Rayon Yarns on Cones, Cops, Spools, Tubes, Bobbins, Warps and Beams, Skeins; Natural Direct and Indanthrene Dyes.

Plants at

Brooklyn, N. Y.

Allentown, Pa.

Spartanburg S. C.

The YARNS CORPORATION *of* AMERICA
290 Fourth Avenue New York
Processors of Crown Brand Rayon Yarn

home from the last meeting was in connection with oiling looms and other machinery. He said when he went back home he began to have his oilers clean out the oil holes and to put oil only where it was needed and to put no more than was needed. He said that as the result of this work he had cut his oil bill down about 40 per cent, and does not have anywhere near as much trouble with bearings getting hot and wearing out as he did before, even though previously he was using a lot more oil. He said they get lots better results.

One thing which he said has helped them is that each oiler is required to turn in each day the amount of oil he has used during that day. He has his tanks in his department, and a gauge in them to indicate the level when he starts in in the morning and the level when he finishes at night. Inasmuch as the oiling requirements are more or less constant, Mr. Burow says this gives him an excellent check on who is using too much oil.

"You will be surprised how far a piece of cotton will fly around in a weave room," said Mr. Niles. "We have made some aprons that we put up at the back of the loom, and when the cleaners are blowing off they blow the lint up against this apron instead of on another warp." Percy Long said they use this same system, putting aprons over the loom in front of and back of the loom being cleaned.

This concluded the discussion, and the delegates repaired to the main dining room where the regular association luncheon was held. In the business meeting it was decided to leave the selection of the place of the next meeting, to be held in the Spring of 1930, to the program committee.

Old Knitter Letter.

(*Continued from page* 207.)

his grocery bill. He said he didn't think that was any of my business, so I told him either to start paying it or get employment somewhere else. He soon got the bill paid up. About a year later I had to discharge him for stealing stockings.

There is a responsibility that you must discharge to every parent who puts his or her son in your employment, to see that they work in an environment which is elevating. You have a duty to discharge to the community by not bringing into their midst any influence that will jeopardize the morals of the community. If you have a good paying job open, it is your duty to give it to some young fellow who is struggling to make an honest living and support his little family and make a good citizen rather than to some moral degenerate.

If you want to rid your community of the bootleggers, fire their customers, and they will move on to more lucrative fields.

It is a law of nature that every kind attracts its own kind, and you can pretty safely gauge the personnel of any organization by carefully examining the executive heads of that organization. What the textile industry needs most is to clean house and start at the top. We stress education as a remedy of all our textile ills, and this is important, but a good citizen who is trying to live honestly and fairly with his fellow man, even though he is not able to read and write his own name, doesn't want anything that does not rightfully belong to him, and will not take any part in any movement that tends to destroy the well being of his home land. His ears will be deaf to all the diabolical teachings of communism.

It is growing late and I must close for this time. I will try to take up some other points on this subject in a later letter, but let me say in conclusion if you want to avoid labor troubles put the moral standard first.

With every good wish for your success and happiness, I am

YOUR DEVOTED DAD.

Autogyp Process Color Card Issued by Surpass.

Two interesting color cards have been issued by the Surpass Chemical Company, Inc., Albany, N. Y. One card contains samples of bleached and dyed flat-knit and ribbed cotton fabrics in six pastel shades, that have been bleached and dyed in a practical way with the Autogyp process of bleaching and dyeing in one operation, which is explained in detail in the folder. The other card is similar to the first, except that it shows six pastel shades on the new Durene fabric, which due to its lustrous qualities makes it especially suitable for light caps.

The Autogyp process is a patented one, originated by the Surpass Company, by which all types of cotton materials, as well as cotton and mixtures of other fibers may be bleached and dyed in one operation, with no necessary previous treatment. It is pointed out that while bleaching and dyeing simultaneously, this process removes dirt, seed, motes, etc., from the gray goods in one operation, requiring three hours to complete the process.

The company points out that there is a saving in equipment and floor space, due to the elimination of kiers, lime tubs, etc., the regular dyeing machine used for the particular class of material being processed, being the only equipment required. It is further stated that this process is adapted for dyeing in the roll as well as in the various forms of raw stock, skeins, beams and yarn dyeing machines. Handling and labor cost are also reduced, it is pointed out, as well as the time element.

A New Account Added.

Frank R. Henry, Masonic Temple Building, Greenville, S. C., sales agent for building materials in the textile field, has taken over the account of the Carter Bloxonend Flooring Company in the southern territory. Installations of this material have been made at the Chicopee Manufacturing Co., at Gainesville, Ga., Industrial Rayon Corporation, Covington, Va., Draper Corporation, Spartanburg, S. C., etc.

Purposes of Textile Auxiliaries, Hartsville, South Carolina.

Fred B. Voegeli, formerly with the Hartsville Dye and Print Works, Hartsville, S. C., is now associated with Textile Auxiliaries of Hartsville. This organization operates three departments, one for the sale of special textile machinery of their own make, as a sales agency for Delahunty Dyeing Machine Company, Pittston, Pa.; for raw stock dyeing machinery and beam dyeing machinery, as well as rayon machinery for Virginia, North Carolina, South Carolina and Georgia. Another department deals in the sale of surplus machinery, and the third division operates an engineering service for textile plants, such as designing, equipping and operating plants on the association principles, re-locating, re-financing, merging, liquidating, appraising, and purchasing and selling textile plants.